Rethinking Extraction: A Lefebvrian Critique of Sustainable Mining Discourse

By

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Abstract

The idea of Sustainable Mining (SM) has gained increasing traction in the past two decades as an industry-based response to concerns over operational pollution, the (mis)treatment of local/Indigenous communities, and a growing awareness of diminishing and finite mineral stocks. Corporate Social Responsibility (CSR) is currently the theory of choice for thinking about and implementing change at the industrial level, however, this thesis argues that Henri Lefebvre’s theory of the production of space illuminates the serious limitations of such approaches. Lefebvre challenges the dominant modern understanding of space as a neutral, passive, empty container arguing that it is a socially produced realization of particular modes of spatial production. Every society produces its own space, which facilitates and constrains different forms of life. CSR remains mired in that abstract and reductive spatialization exemplified by extractive processes that have made, and continue to make, spaces unliveable for thousands of communities around the world. I suggest Lefebvre’s work offers a quite different way of thinking about sustainability itself, not as an abstract balancing act between three distinct pillars – economy, society, environment, but in terms of how these are, in actuality, always already combined together in and through different modes of spatial production. The focus of sustainability then becomes one of producing and reproducing continually livable spaces, rather than ensuring economic growth.
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Table of Contents

Abstract ------------------------------------------------------------------------------------------------------------------------------------------------------------------ ii

Acknowledgements ------------------------------------------------------------------------------------------------------------------------------------------------------------- iii

Introduction ------------------------------------------------------------------------------------------------------------------------------------------------------------------- 1

Chapter 1: Sustainable Mining’s Lack of Spatial Analysis ------------------------------------------------------------------------------------------------------------------------ 4

Chapter 2: The Production of the Space of Extraction: Its Role and Violence ----------------------------------------------- 32

Chapter 3: Realities and Possibilities: Resistant Spaces and the Possibility for a Differential Space -- 59

Chapter 4: Concluding Remarks: Avenues for Further Research --------------------------------------------------------------- 81

Bibliography --------------------------------------------------------------------------------------------------------------- 89
List of Tables

Table 1: Lefebvre's Spatial Triad 42
List of Abbreviations

PA ------------------------------------------ Participation Agreement
SM ------------------------------------------ Sustainable Mining
CSR ------------------------------------------ Corporate Social Responsibility
OLC ------------------------------------------ Operational Life Cycle
MLC ------------------------------------------ Mineral Life Cycle
GMI ------------------------------------------ Global Mining Initiative
IBA ------------------------------------------ Impact Benefit Agreement
ICMM ----------------------------------------- International Council on Mining and Metals
MMSD ----------------------------------------- Mining, Minerals and Sustainable Development
Introduction

The idea of Sustainable Mining (SM) has been gaining increasing traction in the past two decades: From concerns over operational pollution and the (mis)treatment of local/Indigenous communities by mining companies, to the growing awareness of diminishing and finite mineral stocks, SM is constantly reshaped. In each case, Corporate Social Responsibility (CSR) is used as the practice of choice for thinking and implementing change at the industrial level. Companies are encouraged to apply Brundtland’s 1987 definition of sustainable development: “that meets the needs of the present without compromising the ability of future generations to meet their own needs.” (p. 36) Brundtland’s definition identifies three pillars (intersections) of sustainable development: i) social equity, ii) economic growth, and iii) protecting the natural environment.

Each of these categories represents a set of questions to be considered when thinking about sustainability. They are supposedly offered separately in order to provide a nuanced and balanced approach. There are, however, two related problems with this approach: First, it provides an abstract interpretation of the socio-economic and environmental aspects of life by separating these into different categories. It assumes that these elements are present and recognizable in approximately the same ways in every society. There is no clear understanding of just how and where economy, society, and environment are articulated and supposed to be re-articulated, to fit back together, in such a way as to ensure local and global sustainability (which may entail very different understanding and approaches.). How do we go about producing sustainability? Second, it does not question capitalist notions of development and underdevelopment which leads, in practice, to prioritizing economic growth over social equality/equity and environmental protection. As we shall see, the effects of such an abstract representation of environmental and socio-economic aspects of life and the prioritization of
economic growth can clearly be seen in many contemporary instances of industrial mineral extraction. The inevitable outcome is, by and large, business as usual, something we see exemplified in the two main strands of CSR’s approaches to sustainable mining, whether focused narrowly on mining operations or having a broader remit that includes mineral life cycle theories of extractive sustainability.

In this thesis, I use sociologist and philosopher Henri Lefebvre’s writings in *The Production of Space* (1991), *Critique of Everyday Life* (2014), and *Rhythmanalysis: Space, Time and Everyday Life* (2004) to show how and why CSR remains oblivious to an abstractive and reductive spatialization at work within industrial extractive processes that have historically, and still continue, to make life unliveable for thousands of communities around the world. I then employ Lefebvre’s concept of differential space to illustrate a possible alternative mode of thinking about sustainability and extraction.

The thesis is separated into three main chapters: In chapter 1, I explain CSR’s dependence on, and participation within, a global extractivist ideology that, often quite literally, undermines communal consent and involvement on any but its own over-arching terms. I use Lefebvre’s theory of the social production of space in order to better understand how industrial extraction functions within a capitalist framework. In Chapter 2, I present Lefebvre’s spatial ontology in much greater detail, together with a critical analysis of abstract space as that space produced by, and reproducing, capitalist relations of production dependent upon economic growth. I use Lefebvre’s ontology to identify extraction’s spatial role within capitalist production and try to understand the violence it has often produced and relied upon as part of capitalism’s production of an abstract and often unliveable space. This might be contrasted with the massive diversity of spaces which the imposition of a uniform, ideally frictionless (but actually fraught) space of
global capitalism systematically weakens, transforms, and erases. In Chapter 3, I move on to consider how we might reconstitute mining as engaging with an extractive abstract space by exploring Lefebvre’s conception of differential space in conjunction with examples of alternative approaches to mining. I briefly consider the cases of the Australian Indigenous Wurumungu for an anti-mining perspective and the Afro-Colombian La Tomans for their form of ancestral small-scale mining. These examples are clearly not meant to suggest a pattern for all communities, but are indicative of very different forms of sustainable social space. I then consider how inhabitants of urban spaces may also want, and need to participate in this resistance to the imposition of abstract space by producing differential spaces that begin to facilitate and embody more radical understandings of sustainability. At the very least, Lefebvre provides a theoretical framework capable of recognizing the active role that abstract space plays in constraining current discourses and practices. He demonstrates how the current mode of production of space is neither neutral or natural, and therefore suggests it can, and should, be altered. Although Lefebvre himself makes no references whatsoever to sustainability, I also argue that his theory makes clear that there can be no sustainability that refuses the right of others to produce and sustain their own and very different spaces. Without this, sustainable development just becomes another form of compulsory spatial colonialism. In this sense, actual sustainability is the very opposite of imposing a global capitalist space everywhere.
Chapter 1. Sustainable Mining’s Lack of Spatial Analysis

Following (and sometimes leading) the historical and material currents we call ‘the Industrial Revolution’, mineral extraction shifted from a rare and relatively small-scale occurrence to an industry of highly technologized, large-scale, operations active all over the globe (Coulson, 2012, 47-8 & 81). Although artisanal mining is still common in some regions, mines with relatively shallow shafts have mostly been replaced by deep shafts or extensive surface-level open-pit operations run by national or multinational corporations. Localized/regional demand for minerals now plays a secondary role in a situation where contemporary extraction occurs according to what capitalism assumes are infinitely expandable global market demands, especially, and somewhat ironically, since the form taken by this global economy is no longer tied to the material reality of the gold standard.

Being both a formative producer (as the provider of raw materials) and a product of its times, modern mining has historically participated in incredible social changes and also perpetuated some of the worst aspects of socio-economic re-organization. From its use of slave labour to its perpetuation of colonialism and support of some of the most brutal political regimes, it appears that mining has often flourished in contexts where human suffering abounds (Coulson, 2012, 47-8 and 81; McNeill and Vrtis, 2017, 1-16) Yusoff provides telling examples of this in A Billion Black Anthropocenes or None in which she highlights the role geology and mineral extraction have, and continue to play, in the racist and colonial events/projects that characterize modernity. Although the entanglement of mining and slavery certainly predates the creation of the Atlantic Slave Trade, the expansion of the Spanish and Portuguese empires in the early 1500s changes
them forever. The conception of slavery, explains Yusoff, was intimately tied to solving the ‘problem’ of effectively extracting mineral resources from their American colonies.

The kidnapping and im(de)portation of African slaves for the replacement of Indigenous labourers (80-95% of their population having been eliminated by violence and disease) followed a logic of systematic resource extraction set by Spanish and Portuguese royal courts (Sweet, 2004, 14-18; Borucki et al., 2015; McNeill and Vrtis, 2017, 1-16; Yusoff, 2018, 14). Along with cash crops such as sugar and tobacco, the extraction of precious minerals such as gold and silver “mobilized the hunger” for slaves and motivated the establishment of a continent-to-continent slave trading network (Yusoff, 2018, 15). In doing this, mineral extraction helped establish what Yusoff terms the “colour line” that reduces black bodies to objects and commodities alongside minerals. Geology became “White Geology” as black bodies become another resource to be extracted from Africa and processed through trade to feed a colonial demand for labour (Yusoff, 2018, 15). In such a way, both minerals and black people became inanimate matter, kin resources to be used as required. White geology thus produced spaces in which Black and Indigenous colonialized persons are annihilated. It inaugurates what Yusoff, echoing Michael Taussig, calls a “space of death.” (Taussig, 1986, 4; Yusoff, 2018, 32) Such a space is one in which both personhood and physical lives are simultaneously destroyed through dispossession, displacement (trade), genocide, and labour (Yusoff, 2018, 32-33).

It is safe to say that modern industrial mining and society as a whole would not be what it is today without the production of this ‘space of death’. Though it is a matter of logic and historical fact that the foundations of the past support and enable the production of the future, it would be wrong for us to think that mining ceased producing such spaces with the end of the Atlantic Slave Trade and the independences of former colonies. On the contrary, as many communities,
activists, and researchers will attest, industrial extraction continues to play a significant role in damaging Indigenous and non-Indigenous communal lives and livelihoods, though physical displacement, environmental destruction, imported diseases, and so on, examples of which are littered across our world (Babidge, 2015; Povinelli, 2016, 3, 31-2; A/HRC/39/17; Earthworks, 2019; Bugri & Kumi, 2018; A/HRC/42/19). The mining industry is no stranger to extreme and long-lasting forms of environmental pollution that permanently alter social and ecological spaces. A Canadian example is that of the ongoing issue of arsenic poisoning of water and soil in Ndilo (Yellowknife), Canada by Giant Mining operations (1948-2004). Home to the Dene people who actively live off of and depend on the land, toxicity levels have produced spaces that are life threatening in terms of drinking, eating, or swimming in its fresh water lakes (Cott et al, 2016; Sandlos and Keeling, 2016; Jamieson et al, 2017; Sandlos & Keeling, 2019).

Other examples can be found in every part of the world. In Western Africa, the Ghanaian Ahafo region, mined by Newmont Mining, has seen extensive displacement of its local population, contamination, and human rights abuses (Gawor, 2011; Kwaansa-Ansah et al., 2017; Bugri & Kumi, 2018; Kuwornu et al., 2018; Earthworks, 2019). Ahafo known as the country’s breadbasket, supplied 30% of Ghana’s food production but a large cyanide spill changed this in 2009, causing serious damage to local water supplies, consequently displacing thousands from their subsistence lands. Many attempts at civil organizing to respond to the mine’s activities have been met with swift and illegal reprisals by local and private security forces (Gawor, 2011; Kwaansa-Ansah et al., 2017; Bugri & Kumi, 2018; Kuwornu et al., 2018; Earthworks, 2019).

Another telling example is located in the lithium and copper mining regions of the Northern Chilean and Southern Peruvian Atacama desert. Although not a particularly hot desert, the Atacama is known as one of the driest (Camacho, 2012; Babidge, 2015). Research shows that
industrial mining has accelerated desertification through its (over)use of fresh water from underground aquifers for mineral processing. So low has the water table become that mining companies have been forced, by Peruvian and Chilean states, to fund the construction and operation of the largest series of coastal desalination plants ever seen. Desalinated water, it is argued, will offer a sustainable replacement to speedily dwindling fresh water reserves (Camacho, 2012; Dixon, 2013; Babidge, 2015). And although such engineering feats are appreciated, many still fear they will not bring life back to a region that once had its own water resources. Indeed, many question how desalination systems will be used and if they will mostly benefit mining companies (and other industries) that are largely responsible for over-using and polluting Atacameños water sources (Babidge, 2015; Fragkou & McEvoy, 2016; Barros, 2016, 181).

While large-scale genocide and slavery are no longer so evident, mining frequently does still produce life-threatening spaces, spaces that extract far more than just minerals. Its effects are profound and stretch far beyond specific localities. Entire localities are physically changed beyond recognition, ecologies disrupted, cultures affected, lives altered beyond recognition, and most often, it is racialized bodies and communities that are the most destructively affected. These spaces of extraction can be heartlessly reductive, stripping back and removing social and ecological complexities and communal spaces as if they were just other forms of overburden or unwanted kinds of financial burden (Povinelli, 2016, 3, 31-2). Black and Indigenous communities are disrupted through the colonization of their physical spaces by social forces and practises that threaten the links between peoples and places that previously provided quite different spaces. Even if they are no longer spaces of death, at best, they are changed from
differently lived spaces to locations where people must labour to make their living for other, far distant ‘investors’.

All these geographical spaces, Ndilo, Ahafo, Peruvian/Chilean Atacama, have their particular colonial pasts that linger to this day in their current socio-national and regional contexts. Notwithstanding these pasts, all these communities have struggled to persist as their own respective socio-cultural-ecological entities. In each case, mineral extraction has affected their previously existing communal spaces in ways that cannot be calculated in terms of cost/benefit analyses – they have, after all, been transformed by just such abstract calculations. The damage to natural ecosystems have has often had severe effects that seriously altered lives and livelihoods. These communities often find themselves culturally and ecologically displaced from their lands even if they physically remain on them because the resulting, transformed space, if not actually a space of death, amounts to a space of un-liveability. A space in which communities experience their own weakening and perhaps, with time, disintegration.

The mining industry, of course, prefers to emphasize quite different aspects of this history. All of these activities were, and are, carried on under the banner of extractions’ crucial role in economic expansion, international development, competitive advantage, and nations’ social and technological progress. The modern world simply would not be possible without mining. The industry has also, as we shall see, recently begun to adopt the language, if not always the practices, associated with the term sustainability perhaps seeking to right past wrongs. Whether this goes far enough is a key question. According to Yusoff, past practices associated with mining warrant thinking that extraction, and geology more broadly have, and continue to be, defined and used without acknowledging their complicity in these “historical regimes of material power” (Yusoff, 2018: 3). So destructive are mining’s inner-workings, for Yusoff, that a
complete re-formulation of geological ontology is warranted. This means that the practice, and indeed the auxiliary assumptions on what counts as matter and extractable matter must be questioned and reappraised. We must cease to think of mining and its spaces as separate and uninvolved in the formation of our societies and reformulate it with its full ontological and socio-historical assumptions and effects in mind (Yusoff, 2018, 106-107). Anything less than this and we run the risk of confirming, continuing (and perhaps of excusing) the racist and ecologically destructive past that haunts much of the extractive world.

This thesis hopes to make a contribution to these important discussions through the lens of sustainability. The purpose here is not just to raise questions about the meaning of sustainability, a notoriously vague term, or even to focus on what mining might sustain and for whom (Farely & Smith, 2020, 55). Rather it seeks to take the extractive industry’s historical and present entanglement in producing a divisive, damaging, and unsustainable world seriously at an ontological level. To do this it will suggest an alternative frame for understanding both mining and sustainability in terms of Lefebvre’s (1991) theory of the production of space, in this case the production of (un)sustainable and (un)ethical space. What kinds of space, and what kind of world, has and might mining produce? This, novel approach, as chapter 2 outlines, offers a fundamental way of articulating just how deeply mining is implicated in the ontology and geopolitics of a world now facing catastrophic climate change fueled, in large part, by the consequences of mineral extraction. The coming section will attempt to present current responses to such issues as they are proposed by proponents of CSR practice. It will be followed by my criticisms in the section directly succeeding it.
Current Industry Responses

With the recent increase in public scrutiny, postcolonial assessments, and reaching of scientific consensus on mining’s role in environmental degradation, it is increasingly claimed that the global mining industry has begun to restructure or reframe its operations. In this section, I shall outline industrial extraction’s attempts at addressing its legacy and effects as theorized in its own words and perspective in order to more accurately trace its ideas. A critique of these responses will following the following section. The industry’s contemporary uptake of sustainability in the form of its two more prominent perspectives of the Operational Life Cycle (OLC) and Mineral Life Cycle (MLC). The following section contains possible criticisms of these perspectives. Pointed to as a sign of the growing importance of sustainability is the industry’s adoption of the influential World Commission on Environment and Development (WCED) report Our Common Future (WCED, 1987) popularly referred to as the Brundtland report. The report famously defined sustainable development as development “that meets the needs of the present without compromising the ability of future generations to meet their own needs.” (p. 36) This document exemplifies a Western humanist orientation which focuses on the developmental needs of current and future human generations. As such it is clear from the report that the commission takes human material poverty as a leading issue of current times, a problem that has only worsened in the succeeding decades (A/HRC/44/40). Basic human needs (access to clothing, shelter, food, jobs etc.) are to be considered fundamental when defining current generations’ requirements (WCED, 1987, Chapter 1, point 2). It also places particular emphasis on intergenerational needs and the responsibilities these place on current generations. All aspects considered, development can only be considered sustainable if it works to help provide for the poorest members of current generations without jeopardizing future attempts at
development. A policy that fails to provide for the poorest while failing to think of future generations has no credible claim to being sustainable.

Taking these aspects into account, Brundtland promotes a three-pillar approach to sustainability as requiring economic growth, environmental protection, and social equality (WCED, 1987, Chapter 1, point 2). A successful approach to sustainability will thus be one that balances and combines these three pillars. This means recognizing that economic growth is necessary for the provision of social equality (i.e. providing human needs equitably) while also tempering it such that the world’s natural ecologies are not forgotten and continuously destroyed. Natural ecologies, are recognized as providers of the resources needed for life to exist (WCED, 1987, Chapter 1). Without this balanced approach, it is claimed, developed nations of the global north (Europe, North America, and Oceania) risk leaving behind an entire world which already suffers from poverty, hunger, and the worst impacts of climate change. If global sustainability is to be achieved, it is imperative that all countries be allowed to attain high levels of industrial and economic development that would allow for comfortable living while transitioning to renewable energies (WCED, 1987, Chapter 1).

The mining industry’s adoption of the report’s definition is said to have begun in 1998 with the creation of Global Mining Initiative (GMI) by ten leading mining companies. Its aim was to organize an industry-wide response to growing complaints about mining-caused pollution (Bice, 2016, 6). The outcome of the GMI was the creation of the International Council on Mining and Metals (ICMM) and the Mining, Minerals and Sustainable Development (MMSD) program, which identified the Corporate Social Responsibility (CSR) model as the key way to develop sustainable mining (Reichert et al., 2000; Kapelus, 2002; Dashwood, 2004; Jenkins and Yakovleva, 2006; Bice, 2016, 6). As a business model, CSR requires that mining companies
recognize their duties to, and impacts on, shareholders, host communities, and the natural
environment they occupy.

Crudely put, CSR entails the development of transparent and trusting relationships, the
 provision of direct or indirect economic support to local communities, and participation in the
assessment and protection of local ecosystems through respect for legally recognized protected
sites/zones, the implementation of rigorous waste control, the development of land-use planning
and remediation during the closure of operations (Whitmore, 2006; Schlett, Aug 2012). With
CSR, Bice argues, the mining industry is on its way to drastically changing in the 21st century. In
taking up the mantle of CSR, she claims, a collective conscience has “undeniably been
emerging” within the industry (Bice, 2016, 6). An indication of this growing conscience is found
in the fact that companies no longer speak of their business without including remedial and
prevention of social/ecological harms. Companies are continuously improving their communal
agreement procedures and environmental policies. Bice quotes Bruce Harvey from the Rio Tinto
Argyle Diamond Mine in Australia who argues that where Impact Benefit Agreements (IBA)
between communities and companies once just involved “compensation payments and
community buyouts,” they have evolved into Participation Agreements (PA) in which
communities and companies agree to “jointly participate in each other’s activity” and “jointly
participate in whatever future emerges” out of their relationship (Harvey in Bice, 2016, 88).

Notwithstanding CSR’s contributions to setting the mining industry on a path of change, there
remains discontentment with its interpretation of the industry’s effects. For example, many
(Allan, 1995; IIED and WBCSD, 2002; IISD, 2002; Laurence, 2011; Buxton, 2012; Chen and
Graedel, 2012; Parameswaran, 2015; Kirchherr et al., 2017; Gorman et al., 2018; Gorman and
Dzombak, 2019) criticize CSR theory for its lack of focus on the life/effect of the mineral once it
leaves extraction and processing spaces. They point out that although CSR may influence companies to change their operations in the realm of mining and processing, it suffers from being too narrow-minded in its approach to sustainable action. Its framework for sustainability has been centred wholly on the operation life cycle (OLC) and the mining company’s activities within the spaces of operation that facilitate mineral production. More specifically, this means sustainable practice is thought and enacted only through the exploration, construction, production, processing, closure, and land rehabilitation processes (Bice, 2016; Gorman et al, 2018, 284-5).

Limiting itself to operational spaces, CSR theory has failed to provide a holistic appraisal of the mineral industry’s sustainable action and possibilities. OLC fails to ask such fundamental questions as “how long can metals extraction be sustained?” and “what can be done to make current extraction processes more efficient?” (Gorman et. al, 2018). As such, it misses the larger implications and consequences of unrestricted mineral consumption, use and production and does not even consider the reality and dangers of mineral finiteness or the links with broader urban, market, social ecological etc. spaces. It may be said that existing mining initiatives and research demonstrate the industry’s growing interest in recycling in closed-loop/circular economics and use models (see Allan 1995; IIED and WBCSD, 2002; IISD 2002; Buxton 2012) however, as Gorman et al., note, work advocating these often fails to provide any tangible metrics for assessing the practicality and practicability of such solutions (2018).

A more appropriate framework for mining sustainability that addresses some of these issues is the “mineral life-cycle.” approach, (Gorman et al, 2018, 284-5) which (without denying the need for CSR at the mining-operations level) emphasizes the need to analyze the use of mineral resources throughout their ‘lives’ as commodities with the aim to measure whether extraction
and consumption occur at sustainable rates (see Allan, 1995; IIED and WBCSD, 2002; IISD, 2002; Laurence, 2011; Buxton, 2012; Chen and Graedel, 2012; Parameswaran, 2015; Kirchherr et al., 2017; Gorman et al., 2018; Gorman and Dzombak, 2019).

Shifting our perspective from an operation life cycle to a mineral life cycle aids us in assessing the rates of extraction and the effects the production of raw materials continues to have in the world beyond those spaces of production. A mineral life-cycle model encourages us to push the boundaries of CSR into some of those realms of life not directly involved with extraction and processing (Chen and Graedel, 2012; Kirchherr et al., 2017; Gorman et al, 2018). Practically, this model entails looking through the mineral use and production data so as to gain an understanding of the types of uses and the rates of use and production. Much of the MLC literature situates the usefulness of its work in its provision of the knowledge base necessary for the prediction of future raw material needs (Allan 1995; IIED and WBCSD, 2002; IISD 2002; Buxton 2012; Gorman and Dzombak, 2019). A particularly interesting issue for its proponents is bringing the extractive industry to terms with the inevitable end of mining on Earth. Indeed, according to the latest research, extraction is stuck in a paradoxical position as an unsustainable industry that, nevertheless, must remain sustainable because of the importance of minerals for modern life. Mineral resources are finite on Earth and this means that major changes must occur within the industry if it is to continue to exist (Chen and Graedel, 2012; Kirchherr et al., 2017; Gorman et al, 2018).

Examples of the kinds of changes needed are the aforementioned closed-loop or circular reorganization of our economies and extraction so that recycling and mine tailings become some of the main sources of our minerals. As such, the MLC model requires industry to situate and assess its own spaces of extraction and processing in relation to regional and global spaces that
are not entirely within the control of the industry itself. Furthermore, the MLC asks that the industry reflect on its position beyond its identity as a set of businesses providing for a market. Instead, the industry must focus in on its effects on the world in terms of its supply of raw materials. It must begin to think in terms of intergenerational justice and not just in terms of profit generation. To be clear, the MLC model does not propose to do away with CSR and its specific operational perspective, on the contrary, it wishes to enhance it by turning some of the focus to a broader look at material use of the minerals extracted by the industry. In other terms, MLC claims to push the industry’s boundaries for responsibility. Mining companies are not simply responsible for the manner in which they mine and treat locals, they also share a responsibility in the rate of material extracted and consumed (Chen and Graedel, 2012; Kirchherr et al., 2017; Gorman et al, 2018).

Each model seeks to promote continued profit generation in the mining industry while not compromising the possibilities for development required by future communities. The difference between the two is largely one of scope. CSR sustainability is directed at operational spaces and the communities and environments in the direct vicinity of company assets while the MLC attempts to expand the notion of mining sustainability from one of the process and life-cycle of the mine (in relationship with host communities) with one of societal needs for minerals. Sustainability becomes more than just the avoidance of pollution and maintenance of local environments and communities, it is expands to a societal/global/human scale and expresses worry for intergenerational justice beyond the question of pollution, working conditions etc. In other words, while caring for the intergenerational sustainability of local community and environmental spaces adjacent to extraction assets, with MLC, the industry must now attend to its effects at the level of humanity and its future. Both models treat humanity as a universal
category whose future is considered not according to peoples with their differences and specificities but simply as ‘those who need and use minerals.’ We shall see later on how problematic this view of humanity can be, as it fails to consider the differences and contexts of experiences of member-peoples of humanity (namely, that of black and brown bodies enslaved or murdered for extraction).

When the mineral life cycle method proposes a shift away from solely focusing on mining operations, it carries two important implications: The first and more obvious one, being the expansion of what we consider mining sustainability to be. Research shifts away from pollution remediation and prevention to involve the forecasting of mineral availability through the assessing of material ‘stocks’ and ‘flows.’ As such sustainability comes to encompass society’s ability to maintain a steady balance between material availability and production/consumption. Since mineral resources are not infinite, it is claimed, this balance can only be established through a maximization of efficient mineral flow (use) through our economic systems. Such efficiency, for proponents of the MLC method, is produced through the workings of a ‘circular economy.’ That is, an economy in which industrial mineral production, in partnership with other industries and national governments, shifts away from unfettered production/consumption. It recognizes the reality of mineral finiteness and adopts strategies and technologies of large-scale recycling and reuse in attempt to sustain mineral stocks for as long as possible (see Allan 1995; IISD 2002; IIED and WBCSD, 2002; Chen and Graedel, 2012; Buxton 2012; Kirchherr et al., 2017; Kotarska et al., 2018; Gorman et al., 2018; Kinnuen & Kaksonen, 2019 etc.).

The second, and less obvious implication of this method, is its effective appeal for a renewed interpretation of industrial mineral extraction. This call appears through its methodology that redirects our analytic gaze from the mine’s life cycle to the mineral’s life cycle. It reveals an
alternative relationship in its treatment of the mineral *as more than just a commodity*. Indeed, in addition to its identity as commodity, the mineral has attained curious characteristics that make it sound like it is being counted among the living: i) it is said to have a ‘life’ cycle, ii) it is finite, and iii) it is indispensable for modern human life.

From this reinterpretation of our relationship with the mineral, follows a necessary reinterpretation of the extractive industry. It is more than just a business seeking a social license to operate. It is now asked to be responsible for thinking and producing the efficiency required to make the mineral’s indispensable, yet finite life cycle, last for as long as possible. In other terms, extraction becomes conceived as a more just form of *production*. It gains a recognition of its participation in the *reproduction* of our material and social world. Its remit has expanded from one of just recognizing the impacts of local productive processes to one also cognisant of the industry’s role in the global reproduction of the conditions of production and consumption. As such, with adoption of a MLC approach, the industry must recognize the incredible weight of responsibility its members bear now that its task is no longer simply one of extracting for profit but insuring the continued performance of modern life.

Reinterpreted according to the MLC lens, mining sustainability shifts to the realization of a new relationship with minerals in which efficiency of use is prioritized alongside profit generation. Instead of focusing on the ratio of amounts of ore and profits produced, we refocus on world ore stocks to use ratios. Thus, the analytical gaze of the researcher shifts to the larger social role the industry plays as the enabler of mineral use. Our application of this lens thus modifies the industry’s shape and, recognizing our contemporary context of increase in demand being met with diminishing known reserves, appeals for a change in its material effects (Kirchherr et al., 2017; Gorman et. al, 2018; Kotarska et al., 2018; Kinnuen & Kaksonen, 2019).
Recycling and reuse are identified as the two most adequate strategies/principles for a material transformation of the industry. They achieve the increasingly necessary transition from a mostly unregulated production/consumption of extracted resources to the more viable long-term maintenance of mineral stocks.

Given the right political conditions i.e. the provision of state-sponsored economic incentives for recovery and the creation of national (preferably mandatory) company responsibility programs, proponents of MLC claim it should be possible to initiate a recycling/reuse regime (Hendrickson et al, 2006; Graedel, 2011; Matthews et al., 2014; Gorman et al, 2018). Indeed, with product materials gaining in complexity (causing an increase in material mixes), product obsolescence being pre-programmed, and it being cheaper for producers to throw away than to reuse/recycle, it becomes clear that incentives must be provided for all echelons from design to production (Graedel, 2011). States will also be key decision-makers in establishing which minerals are be designated as critically important. The government of United States of America is already producing lists in which it details which minerals are to be considered ‘critical’ for further development and defence (Final List, 2018). It defines ‘critical minerals’ as

(i) a non-fuel mineral or mineral material essential to the economic and national security of the United States, (ii) the supply chain of which is vulnerable to disruption, and (iii) that serves an essential function in the manufacturing of a product, the absence of which would have significant consequences for our economy or our national security. (A Federal Strategy, 2017)

It also clearly identifies the preferred strategies for the reduction of reliance on these minerals which include: “increasing activity at all levels of the supply chain, including exploration,
mining, concentration, separation, alloying, recycling, and reprocessing” (A Federal Strategy, 2017). Though the priorities change from state to state, the US’s lists of critical minerals and strategies shows that it takes heightened state involvement through regulation and need to reduce mineral reliance seriously.

Under such a regime, according to proponents of MLC, consumption of minerals follows a strict path of necessity (as established by the government involved): Mining loses its original unhindered drive to extract minerals and, instead, joins the rest of society in a partnered (public and private) effort to lengthen resource life cycles flows. Mining would continue to occur depending on the possibility or impossibility of recycling and reusing of materials. With these measures, some claim, it would be possible to establish an efficient and long-lasting cycling of mineral resources. What we would be left with is the continued optimization of this ‘circular’ economy in which the mineral’s life cycle is elongated for as long as possible. Proponents of the MLC are keen to point to technological, techniques, and resource management advancements as the catalysts for such an economy. Better technologies can enhance both our use of minerals as we strive to do more with less and continue to mine that which was previously inaccessible. A good example of this would involve the reopening of old mines and the re-mining of tailings for any minerals left behind (Kotarska et al., 2018; Kinnuen & Kaksonen, 2019). Enhancing our resource management techniques and adjusting use policies are also being proposed as potential solutions. Slowly but surely, mining companies would align their activities so as to minimize waste by maximizing reuse, continuing to extract accordingly with rises or drops in mineral demand within the global market. Effectively, a circular economy does not do away with a market economy. It simply regulates the market by switching out of what Merli et al., call its “take-make-dispose” pattern of production and consumption (Merli et al., 2018).
CSR and Extractivism

All of these ideas are well and good, nevertheless, I would argue, both of OLC and MLC fail to offer the rethinking of the industry that would allow us to tackle the ongoing issue of extraction’s perpetuation of a spaces of unliveability. Although MLC theory proposes a shift away from the operational perspective and opens the industry to larger, more global or anthropological questions of mineral use/consumption, purpose and responsibility, it still fails to consider the kinds of spaces perpetuated by industrial mining: It obscures the very uneven experiences of mining produced within and between different communities, nations, cultures and/or races and it begins its critique from spatial ontology that it does not perceive as important, still less question. In doing this, the MLC, like the OLC, continues to ignore the fundamental issues that the extractive industry poses as an historical and effective entity. It continues to ignore its participation in the creation of a past space of death and a contemporary space of communal unliveability.

The MLC’s recommendations remain quite problematic even when analysed in terms of their own assumptions. For all that can be achieved with the MLC and the solutions drawn from it reveal that an all-too familiar jump is occurring from an analysis of stocks and flows to arguing that adopting systems and technologies of recycling and reuse will render mining more sustainable. Though this line of reasoning may seem plausible to accountants and managers, it largely ignores the crucial dimension of the mineral’s space. Most, if not all, MLC studies which meticulously analyze data in order to perceive rates and flows of mineral use, remain wholly uninterested in the actual spaces minerals traverse and produce whether the spaces in and through which production and use occur, or the places where the data is generated. The spaces
are hardly ever mentioned beyond mere data contextualization (i.e. copper production in the USA see Gorman and Dzombak, 2020). The consequences of such uninterest is keenly felt in the theory’s conclusions which can be seen to jump-the-gun from data demonstrating mineral overuse to suggesting the increasing use of recycling methods, to the establishment of a ‘circular economy.’ Meanwhile, the socio-economic and political contexts that make up the space in and through which industrial extraction operates are frozen in the background. Taken as such, and despite its promising, more responsible and interesting solutions for sustainability, MLC undercuts its own momentum by failing to analyze the spatial (legal, national, economic, embodied) context in which its solutions will be performed. Without it, the method is nothing more than an abstract performance of data analysis making interesting points without connecting them.

Jumping from data analysis straight into political economics demonstrates to us that MLC theory uses a very narrow mode of apprehending the world. It completely ignores its history of instrumentalization of the lives of black, Indigenous and working persons and thus of its production of a space of death. Speaking of stocks and flows is important but, done on its own, it signals an erasure of the past and present experiences of millions of people who suffer from industrial extraction. It is a treatment that considers the industry neutral in affairs that are not directly related to its own interests. One could, of course, argue that some more recent elements of CSR theory have dealt with the issues of environmental racism directly (see Monsma, 2006; Tschakert, 2009; Holifield et al, 2010; Roy Gregoire, 2019 etc.), but the very point here is that this is always done from an extractivist perspective, that is, one that has already accepted extraction. It is the creation of codes of conduct by and for corporate business organizations and, is thus always already emanates from theory involving questions about and for the capitalist
business of extraction. Rarely are the great societal questions of ‘why we should extract?’ or ‘what we should extract for?’ or ‘do we really need it?’; ‘how do we define our needs?’; ‘who/what suffers most?’; ‘is mining worth being done if we/others have so much to lose?’ asked seriously since these are very much antithetical to the business imperative of a mining company i.e. the extractivist imperative. If these questions have been asked, it has only been as a quick aside meant to convince us that that there is a real necessity and demand for resources (see examples Kogel, 2013; Bice, 2016, 1-6).

Starting with the acceptance of the business imperative, theorists using either MLC or OLC are kept from seeing the industry’s spatial effects (i.e. the creation of spaces of death and unliveability). They foreclose the possibility of these questions by submitting to an extraction imperative itself answering a market demand that is mistaken for absolute existential need. As it is mistaken, it is imposed onto any socio-ecological needs that may express themselves separately or otherwise from it. It is thus that communities of the Andes/Atacama, Ahafo, Warumungu, and Ndilo (Yellowknife), like thousands of others across the globe, find their voices unheard when they reject or wish to end mining operations. Theirs are the voices of specific experiences of space that are related to specific places interpreted communally. These experiences may, or more usually may not, adhere to an extractive imperative at an industrial scale (for examples of green artisanal mining or communities that reject mining of any kind see Tschakert, 2009; Urkidi, 2011; Vera et al, 2012; Li, 2015; Ishkanian, 2016 and below chapter 3).

In the Ahafo region of Ghana, for example, a large majority of inhabitants are subsistence farmers existentially and culturally tied to the land. Those communities disturbed by Newmont’s open-pit mine had been living on these lands for generations prior to their eviction. Theirs had been a complex customary system in which tribal and familial leaders constantly
negotiated/renegotiated land access between themselves (Mares, 2012 & Evans et al, 2015).

Little was ever heard from the Ghanaian state in the capital of Accra until the arrival of Newmont in 2003. And, even then, the government’s presence was expressed by company citation of Ghanaian law permitting overriding customary approval for land seizure and inhabitant eviction. Both company and state argued that “mineral-rich land” was “vested in the government,” and that such land could be acquired at any time (Mares, 2012). In effect, local communities could do nothing to halt the displacement of almost 10,000 people as both state and business forces had already joined one another to force families off their lands and secure it for the mine project (Mares, 2012; Earthworks, 2019).

So swift and efficient was the appropriation of customary land by Newmont through state institutions that the question of local consent was quashed in favour of questions of fair compensation for landowners. To this day, much of the research and criticism brought onto mining (in general) follows the same route and mostly involves questions of post-opening (operational) ramifications. Little is said of the fundamental wrongness of ignoring local voices in favour of the national/legal voice for consent (Mares, 2012). So quickly are companies able to move in, that questions of local/communal/Indigenous consent are easily brushed aside. Communities are often left with nothing but a belated reaction to the actions of the mining industry (such as exploration and expropriation etc.) such that it has become clear that political and legal institutions obey an extractivist imperative. In obeying this imperative, civil institutions literally offer up their spaces transforming the politico-legal landscape into ‘extractable’ space in which the industry can, in many cases, roam freely.

Unfortunately, as we have seen, CSR theory (including both OLC and MLC) is largely blind to or silent on the extractivist imperative. And this is so for the simple but important reason that
it begins its discourse with extraction as its axiomatic auxiliary assumption. CSR follows the extractive imperative that operates throughout a global space that, as we see in Ahafo, the Atacama desert, and Ndilo. Following such an assumption gravely undercuts the potential for ethical and sustainable action because it always begins with a fundamental rejection of the value of socio-ecological spaces in favour of extraction and extractable value. If we are to understand how industrial extraction creates livable or unliveable spaces it is vital that we move away from any position that would have us accept extraction as a given. It is, therefore, important for us to seek another theoretical route that does not follow from extraction but may still allow us to understand how it works. Such a theoretical route would need to show how an extractivist space has come to dominate our global politico-legal spaces and thus allow extraction projects to operate regardless of opposition.

**Rerouting to Space**

A theoretical route of interest can be found in what has been called the ‘spatial turn’ of the 1980-1990s: Many in the field of Geography, have operated a dramatic shift in the way we have come to understand the creation and changes of our human spaces (see works by David Harvey, 1982, 1985a & b, 1989, 1994 & 1996; Jane Jacobs, 1984; Doreen Massey 1994, Rob Shields, 1990 & 1999; Edward Soja, 1989; Nigel Thrift, 1996 & 1997; John Urry, 1994; and Sharon Zukin, 1991; along with many others). During these two decades, we saw an unprecedented uptake of work by Lefebvre (1974/1991), Foucault (1967/1998), Deleuze/Guattari (1988), and de Certeau (1984) on the concept of space. Though there remains much disagreement on how to define space and how space affects and is affected by social relations, it is generally agreed that
it should not be understood as a passive backdrop or empty container into which social, economic and ecological relations are poured. Space is, by contrast, often regarded as an active player in the ontology of the world(s) we inhabit, whether this is as means of production, a product (often consumed), and/or a medium for action (Gotham, 2003, 723; Glass & Rose-Redwood, 2014, 46-52; van Loon, 2017, 1-3).

Taken as such, space is no longer limited to the obvious physical sense that we find in the contexts of professional uses of space by cartographers, architects, geologists etc. Instead, we might speak of social space. Social space is the space of social reality, it is the medium, the place (physical, psychological, virtual) of our relations. Everything from the state, economy, and culture occur spatially or as spatial expressions (Elden, 2004, 183; Harvey, 2007, 415-21; Glass & Rose-Redwood, 2014, 46-52). The closest spatial occurrence/expression is that of our individual bodies that act through space and time with other bodies and individuals (Lefebvre, 2004, 7-18). All actions of agential bodies (such as humans) affect space in some way and are affected by it. In this way, everything done by human agents to modify and/or manipulate things and people in space (say the economy) results in a transformation of space. Thus a capitalist economy, which tasks itself with creating and accumulating capital through the production and exchange of consumer goods, expresses itself spatially and thereby constructs space (theoretically, virtually, and materially) according to what it deems most efficient. It thus produces spaces which direct material relations of production (the means of production) in certain directions and not others, towards certain centers and not others (Harvey, 2007, 395-97 & 413-18).

Such a form of space can be contrasted to others which are identifiable through the different manners in which they have produced their spaces and their reasons for doing this.
Furthermore, as individuals and their organization of social relations of production and reproduction affect space, so does space itself have an effect on people and social relations. As all social action and interaction occur through space, it is important to recognize that we as individuals or even communities are not free to construct space as we want: on the contrary the inalienable fact of a spatial context with its own specificities (such as capitalism, the particular location on Earth, culture etc.) always animates, limits or facilitates our behaviours and expressions. It is thus the case that people inhabiting a extractivist economic space will be prone to enacting and reproducing extractivistic tendencies since this shapes and delimits their possibilities for both thought and action.

Understanding space in this manner provides the analyst with a concrete and varied perspective of what occurs in social reality. Analyses considering social space gain insight in the complexity, agency, and dynamism of that which occurs every day. The spatial turn of the social sciences occurred because it was no longer enough to analyze socio-economic-political phenomena using abstract understandings of space (i.e. container/coordinates) (Elden, 2004, 186-88). The turn was and remains a recognition that events are more than just occurrences; they have spatial and temporal contexts, agents and agencies (forces) that are always at play; and there is a dynamism or continuous flow to what occurs. Space, along with time, is a crucial medium from which we can come to see all of these contexts and agencies interacting dynamically. The spatiality of space means the *mattering* of space. Without an analysis of social space, rates and flows of goods and people remain abstract patterns in emptiness. For them to make sense to us, for them to become meaningful, they must be conceived spatially with the rest of material social life (Soja, 1989, 78-84).
Interpreting the extractive industry with an eye to its enacting, inhabiting, and producing socio-historically specific forms of space from which it is in no way detachable, would help us perceive the many issues of mining as it is performed and provide insight into the depth of changes required to make mining contribute to sustainable social and ecological spaces. Seeing it as such, we follow and affirm the fact that the industry is much more than an extractor of minerals but also a key participant in the production of a particular global extractivist social space, a space that conjoins and creates very particular social/ecological conditions. Not only was industrial mining born out of certain ideas, developed by certain people (see Agricola, 1950, xxv-xxxii) and pre-existing forms of production (namely, feudalism then capitalism), it has its own spatial and temporal effects on the whole of the world. Capitalisms spatial effects are felt in:

i) its participating role as user and producer of knowledge on or about the world through the development of abstract geo-spatial and geological mapping – thus, portraying space in accordance with a Newtonian spatial ontology that reduces it to a measurable container of discrete ‘stuff’. A portrayal that lends itself exceptionally well to the capitalist economics which treat this material stuff (such as minerals) as ‘resources’ and ‘commodities’ to be freely moved/removed and exchanged – and;

ii) As a literal fashioner of spaces for exploration, extraction, and processing (with all the infrastructure in between) necessary to ‘feed’ the spaces of the whole of the modern world which makes use of minerals (Bice, 2016, 1-6).

From the perspective of this abstract Newtonian-capitalist ontology, we are left with a fairly simple world: one of discreet objects and people who fit neatly within specific latitudinal and longitudinal locations in a grid-like frame. With the help of quantitative measurement models, (some) human beings can map their movements and easily understand space to see where they
move within it. Because that is all Newtonian space really is: a neutral and inactive extension of distance between objects. Objects, such as minerals, may be moved/removed at will within this space for the purposes we have of them. All we really need to do is to measure the quantities of minerals, and then to find the most efficient manner of collecting and exchanging them. Given this grid-world, the capitalist economic framework provides us with an efficient model for extracting/producing minerals and exchanging them in vast quantities, using the least amount of time to cover either great or small distances. In essence, we are finally left with a world of stocks and flows where space, like much of everything else is dead and set in motion through human use. Such a view of the world may be interesting for understanding supply chains but, given the pictures provided, for example, by Yusoff of a complex world of non-neutral extractive practices, such an quantitative, grid-like view of space is simply too abstract. It completely ignores the ongoing dynamic socio-historical, cultural, and emotional contexts that shape our lives. Using this ontology results in nothing more than a negation of the many varied, rich and diverse aspects of life that give it its full significances and the many different possibilities afforded by different kinds of space. It is probably fair to say that the key spatial theorist setting out an understanding of space that recognizes, critiques, and provides a way of theorizing its social production was Henry Lefebvre. As part of this criticism he also points the way to understanding how potential alternatives to this Newtonian / Capitalist space might arise. The very idea that space is a product and medium of social relations is credited to Lefebvre, who provided a dialectical materialist theory and description of this production in his famous *The Production of Space* (1974/1991). Lefebvre’s dialectical materialism and focus on both the intellectual and material production of space provides a very interesting method for apprehending all kinds of spaces. Our spaces, he notes, are not these neutral, unchanging, and
unchangeable structures of our lives, they are the very mediums for all of social practice. Space is both a means of production/reproduction and a product of social relations (including labour/material production). For Lefebvre, “groups, classes, or fractions of classes cannot constitute themselves, or recognize one another, as ‘subjects’ unless they generate (or produce) a space” (1991, 416). Thus, every act of self vs other delineation and creation occurs within space because it, to borrow van Loon’s terminology takes place. It is always an act of spatialization (van Loon, 2017, 1-3). Moreover, the act of taking place through the medium of space is not simply just this, it is always a taking/producing of specific kind of space. Establishing a space means producing specific networks of exchange, it is a flow of raw materials (or communicatory acts) and energy. And these, just as much as our wills, play a role in shaping space (Lefebvre, 1991, 85). Thus, as much as we participate in the production of space(s), we must be aware that space is always already part of our mode of producing, that it is a mode of production of its own and, as such, that our taking of space is always affected by a previous space that directs our creativity in specific ways.

The production of space is an ongoing performance by groups, institutions, and individuals (Shields, 1999, 146-7). Our very own human history, argues Lefebvre, is riddled with examples of spatial change. Lefebvre, presents these changes in the form of the dialectical transformation of spatial ‘logics’ throughout our material histories: Thus we see that what is considered the Feudal period had its own feudal/aristocratic socio-spatial logic that, because of eventful material changes (discussed in chapter 2), transformed into early modern capitalism through a shift in material production which involved/demanded a completely new arrangement of space (Lefebvre, 1991, 268-9). With a capitalist form of material production, a capitalist logic of space imposes (or attempts to impose) itself on all ways we generate space. Thus, we find this logic
within our built spaces (buildings, infrastructure etc.) and our interpersonal spaces: The very rhythms and spaces of our lives having been determined, for example, by a factory logic of time and wage labour, we are thus also allotted specific spaces and times for leisure and consumption (Lefebvre, 1991, 91-2; 2004, 7-18).

In the following chapters I argue that we should recognize how useful Lefebvre’s work on space might be for developing an idea of a mineral’s social space and for re-imagining sustainability spatially. Firstly, though we should note that Lefebvre himself makes little to no mention of mining as a participant in the production of space, (his focus is very much on urban settings). In that sense, what follows involves an extrapolation and a re-focusing of his work that may create some tensions. Yet it is precisely his consideration of production that is helpful. If we are to provide an alternative interpretation of mining, a theory that situates material production as central to its understanding of socio-spatial relations already understands a crucial aspect of mineral extraction: namely, its important position as one of modern society’s main material production industries. Mining produces and destroys spaces in particular ways. Extraction, while being the generator of extractive spaces (including explorative, infrastructural, production etc.) is a main participant in the literal material production (I include fueling1) and reproduction of our material spaces. The importance of extraction shines particularly brightly through the Lefebvrian lens which, as we shall see, can help provides a compelling analysis of the industry’s effects on social relations when it projects minerals as nothing but raw materials and sources of abstract profit within a capitalist mode of production. Secondly, and most importantly, Lefebvre’s theory is useful for its provision of an understanding of the links between all spaces. For him, as we shall see, this link between spaces is to be found in the logic used by social practitioners in

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1 Fueling, in the sense of all the extractive industries necessary for the energy economy.
everyday moments of life (Lefebvre, 2014, 686-93). It is in the convergence of our spaces and rhythms of our life activities. Analysing the ordering of these and how they order our lives and give us direction will help us understand how we, and they, all fit together. Three of Lefebvre’s major works *The Production of Space* (1991), *The Critique of Everyday Life* (2014), and *Rhythmanalysis* (2004) all come together to provide an interpretation of the dynamic encountering of space, time, and human activity (use).

The task that lies before us is an exposition of extractivist space and its creation of unliveable space through Lefebvre’s analysis of theory of the production of space. We shall first provide a detailed explication of his theory, with an eye to understanding what motivates his thinking on the matter. We shall then proceed with using his spatial ontology to expose how extractivist space came to its current prominence (chapter 2). Once we have developed an understanding of extractivist space, the last major chapter (chapter 3) will focus on identifying how we may begin to resist our current unliveable predicament. An interesting point of departure will be that of Lefebvre’s own writing on the production of non-abstractive “differential space” that would allow for diverse kinds of spaces to coexist. Following in Lefebvre’s footsteps, we shall attempt to think about what post-extractivist extraction would entail, what the significance of such a thing means for our current spaces, and how it could help redefine our outdated conception of sustainability.
Chapter 2. The Production of the Space of Extraction: Its Role and Violence

In the last chapter, we saw that emerging MLC theory provides an interesting, yet incomplete, reinterpretation and critique and of mining sustainability. One crucial aspect lacking there was a sufficiently robust understanding of the spatial aspects of the mining industry. Drawing on spatial theorists in Geography and philosophy we indicated some ways in which a spatial focus could help us gain a more complex understanding of the mining industry’s wider social, economic and environmental relations and impacts. Without this spatial turn, the industry is often presented as a collection of analytically isolated businesses run according to private interest. Mineral extraction appears as little more than quantifiable ore rates and flows, bought and sold at increasing or decreasing prices, creating x amount of solid waste, and sustainability therefore becomes equally narrowly framed. Yet, it is not just profitability, employment rates or quantities of industrial by-products that express levels of development, destruction, or sustainability of diverse places, rather mining plays an integral role in the (re-)production of very unsustainable modes of spatial relations in modernity.

This makes it obvious why we might want to explore Henri Lefebvre’s theory of the production of space. As suggested, the fact that Lefebvre’s work has not previously been employed to discuss either mining or sustainability (but see Arboleda, 2016) is itself suggestive of the general assumption that space is just a passive container within which human activities play out but also a consequence of his focus on urban spaces. Lefebvre, we saw earlier, is among the most cited for his contribution to the ‘spatial turn’ in the social sciences (see Harvey, 1973; Smith, 1984; Soja, 1989; Shields, 1999; Brenner, 2000; Elden, 2004; Butler, 2012; Elden & Morton, 2015; Arboleda, 2016) and provides a plausible theoretical framework with practical
applications to explain just how social spaces come into being, are experienced, and provide certain affordances for everyday human activities.

The force of Lefebvre’s theory of space is to be found in his double assertion that it is both a *social product* (i.e. a product of active social relations) and a *producer* of social relations (Lefebvre, 1991, 34, 36-7). In making these assertions, Lefebvre wished to leave behind the Cartesian/Newtonian notion of space which described it as nothing more than our pre-existing and unchanging physical context or ‘container’ of human activities (p. 1-2). In such a formulation, space itself could be understood only through the use of Euclidean geometric calculations and measurement, it is just a matter of things location on a grid relative to other points on the same neutral and quantifiable grid. Everything that matters takes place in space, and is extended in space, as with Descartes *res extensa*, (Lefebvre, 1991, 308; Elden, 2004, 186-7) but *space itself does not participate in things activities*. ‘Understanding’ space, in this way, would stop at studying its usefulness in organizing things, mapping things, drawing geometric representations etc. A further consequence of this Cartesian/Newtonian approach is to draw dividing lines between mental space and physical space, and between actual places and space as such – but these are dichotomies that Lefebvre strives to overcome through reconceiving space as the active medium that produces different places and the medium through and within which all thinking and social practices take place, together. There is no separate ‘spaceless’ Cartesian *Res cogitans*. So Lefebvre rejects the view of space as a fixed reality and in focusing on the social production of social spaces argues that the Cartesian/Newtonian idea of space is itself a product of certain kinds of pre-capitalist and capitalist social production, not a neutral description of ‘reality’.
Space can now, in Lefebvre’s framework serve to re-cognize all of the rich significance of our concrete and subjective experiences of particular places that include, but go beyond, the merely geometrically articulable characteristics of space. Limiting ourselves to these characteristics, we fail to express (let alone, understand) the full implications different political economies had/have on our daily lives (Soja, 1989, 79-80). In suggesting that space is socially produced, Lefebvre reminds us that as “social beings, humans are said to produce their own life, consciousness, their own world.” (1991, 68). In other words, Lefebvre, agreeing with Marx, posits that a fundamental attribute of human beings is their capacity to create and change their lives through their continuous and ineradicable involvement in specific social relations of production (Lefebvre, 1991, 68). For Lefebvre, human production “signifies on the one hand ‘spiritual’ production, that is to say creations (including social time) and on the other material production or the making of things...” (cited in Elden, 2004, 184) It is a simultaneously mental and material process that allows for the satisfaction of our daily needs with the production of food and tools etc. and for the spiritual creations such as artistic oeuvres, ideas, ideologies, and practices such as ‘society’, ‘nationalities’, ‘humanity.’

Each social group or society practices its very own set of required tasks for the satisfaction of its needs (material or otherwise) (Lefebvre, 1991, 71). The continuous practice of fulfilling the needs (i.e. social reproduction) always involves a productive rationality which “organizes a sequence of actions with a certain ‘objective’ (i.e. the object to be produced) in view (Lefebvre, 1991, 71; Fuchs, 2019, 135). This ‘rationality’, imposes “a spatial and temporal order upon related operations whose results are coextensive.” (Lefebvre, 1991, 71) In other words, each sequence of actions engaged to fulfill a need mobilizes spatial elements i.e. our human bodies, materials (matériaux) (ores, wood, water etc.), and matériels (tools, weapons, instructions and
interests), in tandem with a temporal ordering of succession and concatenation (p. 71). Such an ordering encompasses the formal organization of “material preconditions of individual and collective activity.” (p.71, my emphasis) Space, said simply, is part and parcel of all production as it is a material precondition of all productive activities. It “subsumes things produced, and encompasses their interrelationships,” as relatively ordered/disordered, coexistent and simultaneous objects (p. 73). However, it does not remain a neutral or untouched thing. On the contrary, its elements (our bodies, resources, tools etc.) are always subject to socially particular ordering directed towards socially particular goals. The physical plane we occupy is thus (re)ordered/modified in a specific manner to achieve our goal: ores are mined, roads are built etc. to facilitate our daily social activities (p.71).

It is specifically because of this rational re(ordering) that space, in turn, “reacts back” upon the social relationships that ordered it through production and produces social relations (cited in Soja, 1989, 81). It “permits fresh actions to occur, while suggesting others and prohibiting yet others” (Lefebvre, 1991, 73). Space, is thus affected by our orderings of it and comes to react and affect us, in turn, by producing the possibilities for further action and production. Therefrom, we may perceive a dialectical relationship between human social production and space occurring in Lefebvre’s spatial ontology. Space, while being acted upon, joins our productive process as the ‘coordinator’ of action, so to speak (Soja, 1989, 81). In this sense, we never arrive within our social world/spaces with these being neutral or indifferent since these are always already ordered according to previous and continuing social manipulations of spatial elements. Previous social manipulations of space may have been ‘rational,’ yet they have also always been formed according to goals; and these goals are always developed according to the particular interests of
members of social groups or between one group and another. Through the politics and strategy of competing interests within social groups (Lefebvre, 1976, 31).

To think about how space works, Lefebvre suggests we recognize three different but not always analytically differentiable aspects, or forms of expression, of space. This way of thinking is also to help us resist the post-Cartesian tendency to fall back into dividing spaces into mental and physical space. These he terms: i) Spatial Practice – or space as perceived, ii) Representations of Space – or space as conceived and, rather confusingly, iii) Representational space – or space as lived. First, ‘spatial practice’ encompasses the actual material performance and expression of a society’s cohesive social patterns and routines through space. The experience of social practice is had by those who are members of the society in question and thus perceive space as they are taught/habituated to. Thus, in a capitalist society, workers will perceive their space in accordance with the mode of production’s ordering of it. Some spaces will be for work, while others for leisure, transportation, consumption etc. Some spaces will be liked, others disliked according to such criterion. Spatial boundaries will be identified according to the requirements of spatial practices, including levels that fit these same spatial arrangements e.g. of private home, factory, neighbourhood, region, nation-state, etc.

Second, the representation of space, involves our experience of space as conceived, for example, through modernity’s abstract geometric and quantificational means. It is the knowing of space from the point of view of scientists, planners, architects, and certain artists who define their art as reproducing the world as it appears or should appear (Lefebvre, 1991, 38). As already noted, modern modes of conceiving space lend themselves particularly well to the ‘cold and calculated’ state/bureaucratic or entrepreneurial appreciations of the world which operate using a strategic conception of spatial elements as ‘units’ of ‘resources’ to be accumulated or
deployed for whatever objective or ‘targets’ required (Lefebvre, 1991, 365). We see this at work in the censing of populations or in the use of cost-benefit analyses in which everything and everyone is ‘inventoried’ for the purposes of better/more knowledge to fulfill whatever targets have been established by those articulating the needs determined by capitalism, for resources, profit etc.

Third, we find representational space which is space experienced as “directly lived through its associated images and symbols,” that find their source in the history of both the specific society and the specific individual experiencing space (p. 38 & 41). A lived experience of space requires no rules of consistency or cohesiveness to exist. It is simply the afforded experience of space by its users and inhabitants that “tends towards more or less coherent systems of non-verbal symbols and signs.” (p. 39) Put otherwise, a lived or representational experience of space is one of pre-reflective (phenomenological) experience. It is a person’s experience of space as a ‘subject’ that is born out of their “childhood, with its hardships, its achievements and its lacks.” (p. 362) Lived space is the result of each person’s process of learning how to parse out our own ‘individuated’ space as subjects with our personal senses and desires, and the ‘public’ space that involves more than just ourselves (p. 362). Although users may use the spaces as they exist, for example, drive cars on highways to shop at the mall, there remains a primordial experience of space, that we relate to through the full range of our senses of touch, taste, smell, sight, hearing without prioritizing any one over the others (p. 162). These attributes of space are summarized below in table 1.
Table 1. Lefebvre’s Spatial Triad

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<tbody>
<tr>
<td>Members of society: Family, Workers/Managers, Tourists, Consumers etc.</td>
<td>Experts: Scientists, Architects, Planners, Bureaucrats, Social Engineers etc.</td>
<td>Users and Inhabitants, their Intimate Experience of Space.</td>
<td></td>
</tr>
<tr>
<td>OBJECTS</td>
<td>Inside and Outside worlds: Workplaces, Leisure spaces, Urban infrastructure (roads, travel &amp; transportation networks), Spaces habitually liked or disliked etc.</td>
<td>Signs, Codes, Images, Drawings, Plans, Blueprints, Abstract Space (commodities, private property, money, finance &amp; banking, global, regional, local markets), Units, Resources,</td>
<td>Subjective Experience, Socialization, Memories, Non-verbal signs, Images Senses (taste, smell, touch, sight, hearing), Intimacy.</td>
</tr>
<tr>
<td>ACTIVITIES</td>
<td>Perceiving Space as Habitually taught: Daily Routines, Performing the Reproduction of Spatial Relations, Production.</td>
<td>Conceiving Space: Geometry, Quantification, Calculating, Strategic Interpretation, Inventorying &amp; Constructing etc.</td>
<td>Phenomenological Experience, Intimate Relation, Communal Belonging/Identification</td>
</tr>
</tbody>
</table>

Seeing it through this triad, we can make sense of the ongoing/dynamic production of space. A building, for example, can be *conceived* according to the architect’s geometric design of it, yet without grasping its relation to other buildings or to the city’s existing system of roads, institutions, and the social practices that it facilitates and requires our understanding would only extend to an ensemble of geometric facts. Even still, if we only consider the building in terms of its design and of spatial practice and do not attempt to understand it from the perspective of those who must *use* it, who *live* it, then our picture is still left wanting. For a full interpretation of the building, we must take all of these terms into consideration. Then, and only then, will we have an idea of how this building contributes to the production of a particular social space.

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2 Table 1 is inspired by that produced in Christian Fuchs (2019, 137).
The spatial triad is a very useful way of understanding that the dynamic dialectical process operant in the social production of space that reacts back to affect our own spatial development in the present towards the future. However, it is important to Lefebvre that we realize that past interpretations of space influenced by Newton’s abstract container, means that modern societies have actually been subordinating spatial practice and lived experience to abstract notions.

Emulating Marx’s history of societal changes of their modes of production, Lefebvre identifies a history of space. In this account of spatial production, Lefebvre demonstrates that past social modes of material production actualized themselves through their own specific orderings of space (Shields, 1999, 170). The ascendance of the abstract formulation of space coincided with the growth of urban industrial and market spaces. Such growth had allowed for the growth of urban centres, which brought with it an increasing concern over the management of space. Lefebvre links this concern to manage space to a wide variety of social changes including, for example, the ‘discovery’ and formulation of perspective by Italian artists and architects (1435) attempting to accurately (rather than primarily symbolically) reproduce three dimensional spaces that lay before them on a two dimensional plane (paper) that is equating their drawn approximations (re-presentations) with the material reality they witnessed (Lefebvre, 1991, 79). Space became something representable and reproducible. Its representation would be accomplished in minds and on paper with the use of the abstract Euclidean geometry of coordinates, lines and planes. The effect was a simplification of space as the seen. As a result, material spaces would now be modeled and built strictly following this visual and yet abstract geometric formulation of space. Just as the blank page, space would be presented as an empty or blank but fillable container. It would only differ in that it extends infinitely and homogenously (Lefebvre, 1991, 25, 41; Elden, 2004, 186-7).
Space, conceived abstractly, lent itself marvellously well to the rising capitalist form of social reproduction. By representing space as a grid-like, homogenous, infinitely divisible, exchangeable and interchangeable spaces, it brought a fluidity and simplicity to space that armed the capitalist notion of property: a mythology of the private ‘lot’ replaced any meaningful signification of the land in its actual material and lived existence. Land, perceived as the lot, is a miniature container, a void of possibilities in which the owner may do as they please. The identity of the land becomes wholly dependent on what is done with or to it by its owner who orders it strategically (Shields, 1999, 177). Even unowned land could not escape as it still functioned in the larger global container either as potentially owned land or as wasteland, with no yet known use (p.177-78). In other terms, perceived abstractly, land literally becomes nothing more than a physical instantiation of its mapped representation. Its spatial elements are ordered under the notion of a property lot to be bought or sold and are only brought to the fore of reflection as physical attributes of the lot adding or lowering its abstract exchange value.

Abstract depictions of space, having been equated to spatial reality first by artists and then by architects and planners and entrepreneurs etc., shaped spatial practice to obey abstract objectives, and repressed our embodied, sensual living of space in favour of a visual appreciation of it (Lefebvre, 1991, 75, 96-8, 166). Our routines continue to be regimented according to our mode of production’s segregation of life rhythms and spaces into that of leisure times and spaces and spaces and times of work. Our bodily rhythms of sleep, digestion, defecation etc. are bound by the master of clock time; by the rhythms of jobs, of the home etc. (Lefebvre, 2004, 8-9; 2014, 806-7). Our physical spaces, specifically our cities and rural areas, are evermore resembling grids on the maps we draw. The rural areas of Southern Ontario seen from the sky are a perfect example of this. Rural road systems are designed to follow the delineations of squared fields. Co-
opted as it is, lived space does not disappear fully, but is morphed into a subservient servant of the capitalist commodification of spaces as spaces of leisure. This is apparent, notably, in creation of tourist spaces in which embodied experience is permitted to occur but, still, mostly under the auspices of a visualization of the world (Lefebvre, 1991 353, 361-62). What is promoted in tourism is not the space as it is or as it could be but as a specific set of attributes: one place is sunny with white sand beaches, another has vast open spaces and so on.

The end result, for Lefebvre, is that modern Western society, finds itself homogenizing different spaces and eradicating the lived experiences associated with them to make them subservient to an overarching, supposedly neutral, but deeply ideological and colonizing ordering of space to facilitate extractive efficiency - (the extraction of profit). It thus allows for vast contradictions in perceived and lived space that limit its potential at providing an equitable and good life for all. Space is increasingly subdivided and regimented in ways that enforce particular kinds of lived experience that suit the space of global capital. The capitalist political economy (ordering) of space continuously operates in a process of centralization of the productive urban and rural spaces and a peripheralization and marginalization of the non-productive. Spaces conceived as non-productive are spaces that actively resist capitalisms use of space (together with all those spaces already devastated by its involvement). All the while, within multinational capitalism, spatial practices run up against one another as all kinds of individuals, groups and corporations increasingly compete for ownership of lots on all local, regional, national, and global levels. Nation-States and international organizations continue to exist and promote abstract space, however, they too run into trouble with space’s? role as divider of space through the commercial competition for lots (Shields, 1999, 180). Spatial elements and products that were once valued for their use, are now merely reduced to a homogenous exchange
value given by markets. Abstract strategy has merged with capitalist valuation and subordinated space to quantification of units. Space, Lefebvre tells us, “now becomes one of the new ‘scarcities’, together with its resources, water, air, and even light” (Cited in Shields, 1999, 180). This statement makes it possible to think how Lefebvre’s analysis might play directly into questions of sustainability.

Lefebvre’s spatial analysis can be compellingly used for the present a critique of contemporary mining. We can use it to determine what the extractive industry’s spatial practice are, how they are conceived, and what the very different lived experiences of those affected by mining tells us about the industry’s roles. It is already clear to us that our socio-economic context remains a thoroughly capitalist one. Thus, it makes sense to suggest that, as our previous discussion of MLC theory demonstrates, the dominant mode of operation within the industry is very much an abstract one. Data, rates of production/consumption, and questions of engineering remain the central themes of contemporary CSR interpretation and criticism. We therefore need to turn to exposing the effects of abstract interpretation of space through the current instantiation of extractivism before we return in the final chapter to working through the implications of Lefebvrian analysis for sustainability.

Following Lefebvre and Harvey’s analyses (see Harvey, 2007) of the capitalist spatial structures, we find that mineral extraction, like other major contemporary industries, plays a significant role in shaping a connected, and now global, world, in terms of technologies, buildings, institutions, etc. And, as we shall see later on in this chapter, these very structures come to participate in our Anthropocentric crises with their steady transformation of our spaces into unliveable ones. In all of this we need to remember that our contemporary spaces did not come out of a so-called ‘natural’ process (following claims of the naturalness of the pursuit of
capital see (Lefebvre, 1991; Harvey, 2007) but of a specific political economy of space; a specific logic of spatial production and use. And here the differences between lived and unlivable space becomes key.

Although Lefebvre spent much time thinking about space, Shields (1999) and Wilson (2014) contend that his leading concern throughout his work is that of Alienation. Lefebvre positioned himself against the orthodox Marxists of his time who downplayed Marx’s early preoccupation with humanity’s alienation from our individual self-creative powers. Lefebvre criticized their overreliance on economics and their obsession with the worker’s economic alienation as itself being an abstraction that had little interest in any experiences not tied to work and the economy (Wilson, 2014). Following early Marx, Lefebvre posits that alienation, though it certainly does have an economic dimension, also affects people ability to live their lives creatively.

We shall return to this matter later but for now it is important to realize that Lefebvre thinks human lives require spaces that afford ways of being creative that are not achievable when our lives are organized and dominated by abstract expressions rather than directly lived intuitions (Shields, 1999, 39-43). Lived space is understood to be the medium which allows humans to fill their spiritual, qualitative, and creative needs through direct experience of life as it is phenomenologically experienced. By erasing and constraining lived space the subjects’ phenomenological experience becomes secondary to the preoccupations determined by capitalist production and consumption, earning a ‘living’ wage, travelling to work, efficient use of time, consumption, etc. The violence of this space’s erasure cannot be overestimated as it affects us on social and individual levels: It robs us of valuable, indeed vital experiences of life that are not primarily or necessarily mediated by abstract exchange or exchange value. It literally destroys spaces of traditional, intuitional, creative practice by either imposing this homogenous abstract
space on top of them, feeding on them for the purposes of material production, or turning them into commodities themselves (Shields, 1999).

Given his focus on European history and the development of capitalism within the Europe, Lefebvre points to a first violence perpetrated by abstraction in the ‘enclosure movements’ which occurred between 1550 and 1850. The common lands were enclosed and privatized and very varied spaces were abstractly homogenized and commodified as lots (Overton, 1996; Shields, 1999). The main measure of this commodified space becomes the parcel and all landscapes (especially the rural) begin to inherit a similar, if not identical, grid-like appearance. Because of these processes, space obtains its ultimate valuation from its exchange as land in the market. Any lived experience of the land becomes secondary in comparison to its valuation as a material entity to be owned and then exchanged. As land, space becomes a patch of delimited space. It gains a definite inside and outside; it can be filled and emptied, etc. Thus, space, perceived through the abstractive logic of the market, is simultaneously homogenized and subdivided.

Space as land, gains an air of flexibility because of the high rate of exchange of land compared to the relatively low rate experienced in the Medieval Era (Lefebvre, 1991; Overton, 1996). However, as argued below, all of these spaces had been the basis for the lived experiences (both good and bad) of the local inhabitants now forcibly evicted in the name of efficiency, profit, and private enterprise. The dispossessed had become subject to abstractive and extractive processes that totally transformed their lived spaces. Industrial mining operations, insofar as they operate on and in land, perpetuate a very similar, ongoing, process to that of enclosure.
The Violence of Extractive Space: Dissimulating the World and Producing Unliveable Spaces

We turn now to elucidating the role of the extractive industry within the larger space of global capital then move on to demonstrating mining’s (direct and indirect) participation in the production of unliveable spaces and finally, to the possibilities offered by Lefebvre’s alternative focus on lived spaces. As we have seen, mining occupies a key position within capitalist relations of production because, with other vital industries such as agriculture, it sustains these relations. Extraction provides the raw materials and fuels necessary for the construction of most modern goods and the built environments that house them. From the very products we use in our daily lives such as our phones, toasters, tables and chairs, to the factories, shopping centres, and roads that lead to them, mining is omnipresent and indispensable. Much political tension on the world stage is caused by the access and availability of the ores the industry brings to the surface, for it, in many ways, is the key industry for the continuation of capital (LeBillon, 2014; Grynberg and Mbayi, 2015; Arboleda, 2016). Therefore, it makes sense to interpret the extraction industry as a powerful mobilizing and constructive force for contemporary societies.

Extractive space, born out of a specific historical process of homogenization through abstraction and commodification, fits into the multiscalar space of the global capitalist market. The spaces of industrial extraction lie within a matrix of many political, legal, and culture spaces of the local, communal, regional, national and international contexts. The movements and affairs of extraction are regulated or ruled in accordance with the manner in which these spaces are ordered. Along with these, extractive space exists within, for, and as spaces of capital (spaces of production and consumption). All infrastructural, industrial, residential etc. spaces are affected by or belong to each space of the matrix in some manner. This great convergence of spaces is what Lefebvre called ‘global space’ (Shields, 1999). All spaces are what can be termed
‘intersections’ of many relations and flows. Global space is the ultimate expression of this intersection as the sum of all spaces put together. It is, as Shields puts it, the ‘planetary’ space (1999, 145).

Thinking that all spaces intersect in the same manner or equally would be a mistake. Many aspects of spaces are also determined by their functions, physical attributes, national and cultural affiliations, etc. However, we can still focus on the primary spaces which relate to mining as dominated by Lefebvrian as ‘Concrete Abstractions’. Money, commodities, and the exchange of material goods, are all examples of concrete abstractions. Money is an abstraction, (the universal exchange value) yet it has been made quite concrete because it fuels our exchange system which, in turn, structures our social world. Spaces of extraction find themselves within the spaces structured by and for such concrete abstractions. In this way spaces of industrial mining are structured according to the concrete abstractions of capital and the market in order to construct and maintain spaces of consumption and capital accumulation (Lefebvre, 1991, 81-2). As the determining logic of extraction’s output is that of concrete abstractions such as *capital* (in terms of profit and its reinvestment) through *exchange* of commodified raw minerals etc., it is fair to describe contemporary extractive space as an important example of a concrete abstraction itself. For this space is nothing more than a concretization of those abstract concepts (Stanek, 2008).

Though much good may come from these spaces, the processes that provide these goods are becoming increasingly abstract and destructive: Lefebvre (like many Marxists) often poses the one key aspect of such destruction in terms of ‘alienation’, but, as already noted, his interest is not just in alienation from ‘productive’ work and the worker’s products but also from the spaces that make life liveable i.e. their socio-ecological communal spaces. Spaces of accumulation alienate us from our communal spaces in the form of a ‘distancing’ of ourselves from the world.
through a reductive ontology (objectification and commodification) that might be defined as colonial and even terrorist in its threat to the spaces that emphasize different lived experiences of space.

Lived experiences themselves, phenomena, become ‘frozen’ by objectification’s treatment of them as discrete and often non-agential objects. Dynamic elements of the world, like emotion, the geological undergrounds, and communities, are ‘cooled’ to treat the world dispassionately through the abstract gaze (Lefebvre, 1991, 287, 309). Time is reduced to clock and factory time that rules our experience and reorders our embodied and non-human rhythms (Lefebvre, 2004, 8-9) (just as the transformation of animal husbandry into industrial farming quickens animal growth rates (Tallentire et al., 2016). Labouring bodies are also commodified and objectified, especially Black bodies that already experience the weight of racist colonialism (Yusoff, 2018, 15). Even the underground world and its minerals are reduced to lifeless static deposits awaiting extraction rather than, for example experiential underworlds resonant with ceremony, art and mystery. Only their participation as discrete objects and/or commodities lends them any identity at all through the abstractive processes and gaze of capitalist accumulation. Cool and calculative, we become accountants of every aspect of our lives; so well have aspects of our lives and society been integrated into these processes that some even recommend sleeping more often as a possible path of resistance (see Crary, 2014).

Simultaneously, this process estranges us from ourselves because we end up objectifying ourselves. Lending ourselves fully to capitalism’s abstract logic, we cut ourselves from our worldly roots and become subsumed in a cold flattening of the world. We cut and categorize the world piece by piece and weaken or erase our and other’s social belonging (Smith, 2001). Repetition of the same becomes our daily exercise in practice: repetition of spatial types
(homogenization + specialization) and the establishment of routines lead to our becoming repetitions ourselves as we lose the socio-spatial moorings that made us different (Shields, 1999; Smith, 2001). This results in a general negation of our lived and communal experience of space. Being unanchored from space and prioritizing time and energies to the further development of capital, human subjects are stripped of an embodied and subjective relation to the world that allows self-actualization through spontaneous living (i.e. an acceptance of the world) (Shields, 1999; Charnock, 2014). Abstract space, according to Lefebvre, relates negatively to a differential space-time: “It has nothing of a ‘subject’ about it, yet it acts like a subject in that it transports and maintains specific social relations, dissolves others and stands opposed to yet others” (1991, 50). And it is with such transportation, dissolving, and opposition of and to certain spaces that capital produces forms of alienation.

Alienation, for Lefebvre as for Marx, can have either positive or negative effects. It can strengthen societies while also undermining them in some way: A good example is that of capital’s increase in mobility of people and information. Advanced transportation technology (trains, cars, airplanes) and the internet have brought us a more connected world (termed ‘Globalization’) via a virtual space in and through which, some argue, the marginalized can express themselves, rendering them more visible (Arboleda, 2016). However, once we partake in the mobility offered by capital, we enter into a raging current of competition and movement. Our own movements become programmed as we move in “a daze from obligation to obligation,” (Shields, 1999). Our spaces, for Lefebvre, suffer the same fate when we produce them according to conceptions and ideals of capitalism: Infrastructure is built in order to connect production centres with markets. The circulation of people comes to conform to that of capital, making it hard to disassociate people and space from capital. As we see with Harvey, in the capitalist
framework, the built environment comes to be known as “fixed capital” because roads, bridges, and buildings etc. are valued and assessed primarily through the amount of capital used to purchase the land plot, construct, and then maintain these (Harvey, 2007).

Enclosing land had the effect of negating the sense and meaning of traditional ties to it had by original inhabitants. It physically removed entire populations from places they called home (Neeson, 1993; Overton, 1996). This negation of legal and physical traditional ties represents an unacceptable form of alienation, for Lefebvre, as it amounts to an alienation from our lived and communal experience of space. The loss of lived experience, he claims, is tantamount to the erasure of our very selves, for the _lived_ is inherently related to individual embodied life and experience (Lefebvre, 1991; Simonsen, 2005). However, in addition to embodiment, lived experience is also related to social and epistemological ways of apprehending space (Lefebvre, 1991; Simonsen, 2005). In legally instituting the enclosure of the land, the possibility of experiencing the land as anything more than an ‘enclosure’ was negated. Even if this experience could be recovered in the ability to purchase the land back, the recovery would only be partial: people would still be participating in the legacy of the enclosure space by purchasing lots of land and treating them as such.

How does this all apply to mining? Well, as one of the industries that has helped shape industrial capitalism and its spaces during the Industrial Revolution (alongside agriculture and commerce/imperialism) (Ashworth, 2017), the extraction industry stands as a remarkable, yet poorly recognized example of a producer or reproducer of spatial alienation. However, in some ways this alienation forms our lived experience of different environments, different social arrangements and values. Modern industry has brought forth different creative potentials, opening some paths while closing that of lived experience and action. As we have seen, this
alienation occurs in two important ways: i) the reduction and subjection of space to abstract representations of it, ii) a material alienation through objectification and commodification. We can see this pattern emerging in very early accounts of modern mining. For example, Georgius Agricola who, in *De Re Metallica*, (first published in 1555 and usually referred to as the first modern text on mining) emphasized the possible returns from mining compared to agricultural production (Agricola, 1950, xxv). Agricola believed that modern mining heralds the creation of a novel space in which beginning mining was a simple a matter of will. He felt the prospects for successful mining were high due to certain high returns (Agricola, 1950, xxv-6). Much like the supporters of land enclosure for agricultural production, Agricola presents mining as a sure and efficient to make profits. Spaces, referred to as the ‘surface’ and the ‘underground’, like ‘the land’, take a secondary position in his thought. Profit, and the possibilities for its maximization, are thrust to the centre of the discussion such that anything else becomes a mere means to its attainment.

By turning away from a perception of mountains as anything other than containers of valued ores, Agricola, presaged contemporary 21st-century miners in performing an epistemic ‘distancing’ from the phenomenological experiences of natural spaces. Our lived experience becomes secondary, since mountains have been transformed into objects, property, and/or ‘overburden’. They no longer are simply natural or grazing space, divisions between communities, etc. but objects to be owned, operationalized and used for projects within capitalist socio-economic relations. In other words the mountain becomes part of a space in which it is primarily experienced as an abstract *object* among many others. Agricola, and those that follow in his wake, objectify the mountain as a container and source of minerals qua commodified *resource* to be bought and sold on the market – a market where they fetch more than any local
agricultural production. Immediately, a history and space of small-scale use (sometimes for communal use/benefit) is swept away for a different logic of middlemen, land and mineral market speculators, surveyors, and mining companies, etc. (Bridge, 2009; Bice, 2016). At this point, the mountain has mostly disappeared from view: even if still physically present, it is mostly perceived as a geological ensemble, a reservoir of minerals which may or not be valued by extraction professionals.

No longer a subject to be reckoned with, the mountain has become a heap of challenges to be surmounted by mining engineers and geologists combining to gut the rock and remove the valued entrails. Little by little, the underground is emptied and, depending on the method of extraction, the surface is defaced and rendered unrecognizable. More often than not, landscapes and their ecosystems are affected by waste pollution (see Franks, 2015). Thus, through this process of distancing ourselves through objectification and commodification of space, we have turned away from our previous interactions with the mountain/rock and towards a world in which concrete abstractions are more important than lived relations. An abstract humanity might be posited to be the beneficiary of such relations – its progress – but benefits and profits tend to go in very large extent to a very small percentage of that humanity. We become subjects whose lives are structured according to an objectification that strongly denies the subjective experience of fundamental elements of space (i.e. our bodies and landscapes and the affordances offered by the more than human and more than capitalist world). As such we are all reduced subjects, living reduced lives under capitalism. Our lives having been cut off from approaching the mountain as it is to as a temporary obstacle to extraction, exchange, and profits.

With capitalist space, the possible affordances have changed from those inhabiting or climbing etc. the mountain slopes (among other things) to overcoming obstacles, such as ores
with little to no value, and bringing those that are valued to market. Although the space of extraction may be a space miners and host communities feel attachment to because it, like many spaces of production, provides for their economic needs in this system, it still shares in, and supports the reductionist and homogenizing effect of enclosing space. In fact, for Lefebvre, the claims to satisfaction, most expressed and experienced in spaces of ‘excellent’ working conditions (compare mining in Canada vs mining in countries with lower worker standards [MineWatch, 2020] demonstrates the very peculiar manner in which abstract space confuses us about our experience. Because capitalism has been able to influence almost all aspects of life, such things as having a job, money, and using these for general consumption, has habituated us to using concrete abstractions. So present are these abstractions that they become hard to deny or critique since they provide an all-encompassing and abstract (and often actually concrete) frame enclosing lived experience (Shields 1991; Kipfer et al, 2012; Wilson, 2013). Workers too, after all, have become concrete abstractions, expenses on a balance sheet, a focus of human resource management, a part of a labour force of extraction to be hired and fired whenever ‘external’ (but actually internalized) market conditions demand etc.

To compound these issues, late capitalist abstraction, having neatly pushed productive spaces away from central urban zones in affluent parts of the world and into peripheral zones (such as areas inhabited by fewer and less affluent peoples), has doubly and literally distanced a majority of consumers from the spaces used to produce their consumptive products (Brenner, 2014; Arboleda, 2016). Epistemic and literal distancing have essentially rendered us oblivious to the conditions we are putting other people and environments through. While we consume, our space and time continue to be compartmentalized and crippling contradictions have begun to emerge. Quality (of life and products) is increasingly repressed in favour of quantity. Denominations such
as ‘productive’ and ‘leisure’ come to order our time and space. Specializations of space as those of leisure or work compartmentalize our lives as the metrics of maximization of production per minute in space and customer satisfaction vs employee satisfaction come to supersede the possibilities for communal wellbeing and of communal practice for its own sake (Lefebvre, 1991, 353; Shields, 1999). Passions, for those who can enjoy them, often become hobbies as discovery is relegated to spaces and times away from work. The many who cannot enjoy leisure, find their lives invaded by the hurt of body and/or mind breaking work. With increased digitalization, comes increased work rates and it becomes harder to maintain the boundaries of the workspace and that of the family or home space.

In addition, as our social world becomes more connected and mobile due to increased infrastructure and more advanced information technology – so is it being compartmentalized as either ‘local’ or ‘global’, ‘macro’ or ‘micro’. The contrast between the smallest unit of commodified space (the lot) and the planetary space of multinational capital is ever-widening. Both of these are of abstract space and yet are irreconcilable (Shields, 1999; Lefebvre, 2014, 808-25). Because capitalism does not tend toward equilibrium but contradiction, the vanquishing region, nation or company may expand capitalist space and may very well re-deploy the center/periphery, yet they will not change the fact that some spaces will remain peripheral and others central (Shields, 1999).

For Lefebvre, the capitalist space is one that necessarily and increasingly involves the confusion of ‘use value’ with ‘exchange value’. Land becomes real estate, mountains become ore deposits, places and creations of awe and wonder become tourist spaces, etc. All are homogenized into the system of exchange and become, as Shields terms it: “mere opportunities for enterprise” (Shields, 1999, 180). All of these contradictions can be witnessed in the space of
industrial extraction and mark an epistemic-ideological distantiation from lived experience. Industrial extractive spaces are born out of these confusions. They are built according to corporate rules and regulations that define and dictate the use of land. Beginning from corporate axioms, the expertise and practice of geographers, geologists, and engineers give these spaces their material shape as they are plugged into production and market spaces. Lastly, the ores produced, entering into the spaces of consumption, are immediately put to some use. The product of extraction feeds into other abstract spaces and so on. From the exchange of these ores, comes the production of large profits. Some that will be used as capital for further ventures by mining companies, some for salaries, and some are accrued by whichever nation-state the exchange occurs within (Harvey, 2007). And, from this, our current socio-economic relations and the spaces that mediate them are reproduced.

**Producing Unliveable Space**

This chapter has attempted to situate the role of the extractive industry within capitalist and abstract space as defined by Lefebvre. It also attempted to explain how this conceived space distances us from alternative, pre-modern, culturally different and/or maximally creative experiences and forms of space. Finally, we identified some of the contradictions Lefebvre found to be inherent to capitalist space in general, including extractive space. In this chapter’s final section, following in Lefebvre’s footsteps, I shall argue that the ultimate product of industrial extraction is an ‘unliveable’ space. An affirmative form of life, for Lefebvre, is one in which we are able to live as creatively as we can. It depends on spatial relations which allow life to be lived to the fullest and should not render our lives dependent on wage labour or ‘work’ or leisure in its narrow sense i.e. consumption. Liveable space does not force distantiation,
compartmentalisation, according to conceived/abstract representations of space and time. In this space, time is that of our bodies and of the immediacy of nature’s rhythms (say, time of the seasons) (Lefebvre, 1991, 383-5) and space is also perceived as it is lived according to our phenomenological experience of it, and most certainly not a space in which concrete abstractions such as the State, money, and exchange value dominate (Lefebvre, 2004, 8-9; Lefebvre, 1991, 383-5).

Lefebvre’s rejection of ‘work’ should not be confused as a rejection of all production. Being a Marxist, Lefebvre aims his critique of work at wage labour and its overall effects on the organization of our society and spaces. He is of the mind that we cannot mistake work with creative production since the former is dependent on the system of exchange and exchange value to operate, while the latter does not necessarily require it. Work depends on particular relations of productions to be in place. Most notably, it requires that owners of the means of production purchase labour power from workers (Harvey, 2007), preferably setup in a specific location and near a pool of labourers. Surplus value is added to a product by the labourer’s work to produce it. Yet this surplus value is not added to the wage (as it would have been for artisans) but ends up in the pockets of the owner since the brand, tools of the operation, the raw materials, and so on, that is the means of production, belong solely to them (Harvey, 2007).

Such a description of the relationship between labourer and owner demonstrates that there is little room for creativity in the ‘workspace’. Workers are rarely paid for their creativity but for their labour power. Even if the work done requires creativity, the very fact that it occurs on company grounds or with company means, robs the individual of the benefits of creativity (Lefebvre, 1991, chapters 6-7). The creativity is always limited by the desires and policy of the company involved. Creativity in the workspace is thus always one rooted and bound to the
principles of profit generation. It is a means to an end and not an end in itself. Industrial mining, driven by and through the spaces of exchange (value), is also predicated on the production of surplus value. All of its abstractions participate in a chain of extraction, processing, and bringing to market for the ultimate end of profits. Profits are often so enormous that many seem to forget the cost of achieving them. So great have these costs been since the induction of the European colonization, the Atlantic Slave Trade and Industrial Revolution, that it is becoming harder to deny that the extractive industry participates in the creation of unliveable spaces (Yusoff, 2018; Overton, 1996). Seen in the Lefebvrian light, the mining industry’s effectiveness at generating capital is not necessarily a good thing. From this perspective the industry participates in the epistemic distancing of people from land and the world in general. Cities and mines are nice to have, because of all they bring to us, but we need to be careful not to mistake their current capitalist (accumulationist) form as the only possible one. In a similar way as with work, proponents of capitalist urbanization have a tendency of presenting it as the ‘efficient’ ‘rational’ or ‘progressive’ and ‘sensical’ ordering of space. This is the case with extraction as well, where industrial mining is likened, by its proponents, to ancient and medieval mining operations, characterized by well-rewarded hard work and engineering creativity. It is often portrayed as a civilization-defining activity analogous to the the ‘Stone’ and ‘Bronze’ ages (See Bice 2016; Mining Association Canada, 2020 etc.). However, there is something very wrong with such representations. They reduce extraction to an unchanging activity: ‘we used to dig in the ground and we are still doing so now. All that has changed is our methods and technologies.’ Yet, a Lefebvrian analysis of extraction will demonstrate that this is categorically false.

Capitalist space is unliveable for Lefebvre, because the distastiation of the world through its objectification and commodification of everything and anything detaches us from the very
grounds of our existence. As humans born of the world we used social organization to better our lot and so afford ourselves spaces in which we could live creatively (Lefebvre, 1991; Shields, 1999; Wilson, 2013 and 2014; Kellock and Sexton, 2018). Capitalist space, if often defended as the culmination of centuries of human struggle to escape natural alienations (the lack of food security, namely). The homogenization of all land and minerals into commodities, the transformation and integration of all relations of production into capital-seeking ventures, and the setting of cities, regions, and companies into competition has bred crippling contradictions in our spaces. However, there is one contradiction that remains absent from Lefebvre’s list: capitalism, working tightly with abstractions, produces a general or global space in and through which there is no end. No end to production, no end to commodification, and no end to consumption. It, thus, makes sense to some capitalists, that the key to many economic and social ills necessitates detaching ourselves from Earth and colonizing outer space (Gordon et al, 2006; Paikowsky and Tsezana, 2018).

Capitalist space, with the participation of industrial extraction, is causing a radical de-territorialization of human societies, which treats differential lived spaces and experiences as expendable. Corporate social responsibility has been proposed as an effort to redress and avoid such issues on the ground. Serious efforts are being made by some mining companies to review the effects of their operations on local communities (Bice, 2016). Nevertheless, CSR remains anchored in the spaces of capital and ultimately fails to remove the contradictions that abound in both operational and corporate spaces. An extractive space affected by CSR would still allow for objectification and commodification. It would uphold the legacy of dispossession that was engendered by the enclosure of land throughout the early modern period. It would also fail to provide an end to industrial mining. As such, CSR, with all its good intentions, necessarily fails
because it cannot critique capitalist and abstract space. For all its advantages, something similar could be said of the Mineral Life-Cycle approach which hopes that a focus on mineral’s life outside of the extraction operation could help reprioritize efforts at sustainable extraction.

Such a shift in our perception would indeed involve enlarging the space of analysis of the impact of mining. Yet it could only succeed if it took the time to add an analysis of the production of the spaces in which minerals moved. It would make little sense for us to seek out the most sustainable kind of mining and yet ignore the socio-spatial changes that would allow it to operate successfully. To be sure, focusing on the ‘life-cycle’ of the mineral may help us understand the uses, necessary or unnecessary, wasteful or efficient, costly or profitable, that minerals have. It can help track the energy required to produce them, the chemical elements released in their processing, etc. It may even, if there is space to allow this within global markets, suggest a need for better wages, etc. But it does not take account of mineral extraction’s role in the transformations of space and the imposition of abstraction as well as extraction as predominant features of those spaces, with all their concomitant affects. Without such a focus, the MLC would fall back into the same issues as that of CSR. It assumes the maintenance of unsustainable capitalist space when the ultimate contradiction is that capitalism has no end or limit. A contradiction such as this, at work as an assumption in CSR’s modes of thought, serves to sever all ties that a rather different sustainability capable of recognizing the importance of quite different living spaces might offer by contrast with the monopolization of space for the benefit of those who profit from its current global relations.
In the previous chapter, we described the role of the extractive industry, not just as something operating within but as something exemplifying and contributing to the production of contemporary abstract-capitalist space. This space is not just localized in terms of its effects, but globalized and materialized in various ways that exemplify the dominance of abstract space. We also saw that there are contradictions operant in its spatial effects and functioning. Extraction, like most industries, sets its productive flows in the direction of urban zones. Meanwhile, extraction continues to occupy and transform space on the periphery, in places considered either non-urban, partially urbanized and unwilling or unable to take part in activities that support these centres. In occupying and transforming these spaces, the industry continues to play its double role as feeder of raw materials to markets and urban centres and as a disrupter and integrator of non-accumulationist communities (Lefebvre, 2014, 611-4). Thus, while acting as a predator for ore, the industry also acts as one for those political economies and ontologies that might otherwise resist its abstract ontology.

CSR theory and practice, we saw in chapter 1, fails to provide a compelling alternative because it cannot disassociate itself from the industry that perpetuates a legacy of displacement and exploitation. No matter how much CSR is practiced, the industry’s predatory behaviour continues to set and upset the rules of engagement. Mines continue to be built and local community consent remains trampled on by the many companies that do their very best to fulfill the minimum legally required by extractivist governments around the world (see Bury, 2005; Mares, 2012; Roadhouse & Vanclay, 2016; Carreño, 2017; Conde & Le Billion, 2017; Earthworks, 2019). MLC’s recognition of the dangers of dwindling ore availability is well
received, but its proponents must realize that this is not the only reason our spaces are unliveable or unsustainable. The industry’s repeated attacks on communal spaces through its blatant disregard for local communal consent is another determining factor. For Yusoff, as we saw, this behaviour on the part of the industry produced nothing short of a ‘space of death’ in which the exploited black and brown bodies of slavery lost their personhoods as they were reduced to the same ontological status as the ores being mined as inanimate matter (Yusoff, 2018, 15, 32-33).

Today, we may not see it as much as a space of death per se but in many cases it remains most definitely as a space of ‘communal unliveability’. We see varying degrees of communal disruption and unliveability depending on the social contexts of the peripheral spaces chosen for extraction projects. The experiences of the Dene, Indigenous people of Ndilo the subsistence farmers of Ahafo, in Ghana, and that of the local and Indigenous inhabitants of the Atacama desert are three examples of contemporary note. These communities have been strongly affected by the spaces of extraction and the ambient extractivism that allows these to operate and multiply without consent (Mares, 2012; Cott et al, 2016; Sandlos and Keeling, 2016; Roadhouse & Vanclay, 2016; Jamieson et al, 2017; Carreño, 2017; Earthworks, 2019).

As we saw in chapter 2, the lack of care for consent is not a coincidence but something integral to capitalism’s deployment of abstract space. We see this clearly in its early modern transformation of traditional communal land into private enclosed property which occurred as a violent form of dispossession. We see this in the early to late modernity successive waves of land enclosure around the world (Neeson, 1993; Overton, 1996), in the colonization of the Americas, Africa, and Asia, and in the creation of the Atlantic slave trade by the Portuguese and Spanish empires (Borucki et al., 2015; Mcneill and Vrtis, 2017, 1-16; Yusoff, 2018, 14). Time and again, abstract space has led to mass spatial dispossession and displacement. Industrial extraction, being
the feeder of raw materials for this structure’s physical instantiations, cannot be separated from it. To think it is possible is to forget the manner in which capitalist-abstract space functions as both a homogenous and increasingly sub-divided space: While they all function in directions that favour capital, capitalism’s spaces are divided by individual, regional, national, and international interests and by the division of labour. Certain spaces express productive or consumptive specializations (Lefebvre, 1991, 98). Industrial mineral extraction, like all other forms of resource extraction is but one specialization among many. In this sense, it makes no difference what the specific interest is or where the particular mine it is. Once an ore exploitation reaches industrial levels, it automatically follows the predator logic of accumulationism.

Keeping these initial comments in mind, this chapter will attempt to locate the forms of resistance and alternatives to capitalist-abstract space in the context of industrial mineral extraction. Our first step will be to reiterate Lefebvre’s definition of lived space and drawing its connections to communal space. Following from this, I will use Lefebvre’s conception of differential space to argue that an effective instantiation of alternative extractive space requires an explicit recognition of the importance of communal space. We will then consider some current forms of resistance, making sure to differentiate those that lend themselves to the production of a differential space from those who do not.

As we saw in chapter 2, Lefebvre conceives of space as more than our geometric measurement and our drawn approximations of it, it is not an empty container. Space is what is produced through our spatial practices and in our lived experience of its elements. Lived experience of space begins through our senses and sensation of the physical world. Our own bodies are instantiations of space, they are our primordial spatial relationship as we use our bodies to express ourselves and to discover our world but this always happens in a social context.
This means that individual experiences and spatial relations are always mediated as part of as a member of a community or group within particular social practices and modes of production. The spatial practice of our groups and communities “presupposes the use of the body” (Lefebvre, 1991, 40) for practical purposes of labour and daily routines etc. There is thus a direct link, for Lefebvre, between our personal lived space and that of our communal space. If we remember back to chapter 2, we saw that lived space was the user’s space and though it begins as a private experience of space in childhood, it is through socialized learning that the child becomes cognisant and responsive to the possibilities offered and the limits imposed on that space. (p. 362). A subject’s private lived experience is not lost, but because of communal socialization becomes mediated through a culture (p. 40) which interprets it in a specific manner. Our social organization, thus comes to play a large role in the definition of ourselves and in the apprehension of our lived space but does not determine it completely.

This, of course, is true even where extractive industries impose themselves on and transform spaces. Here we might think of the miner in a typical 20th-century European coal mining community whose body, in an abstract sense, became economically reduced to a replaceable means of coal production, a source of value to be extracted, whose community historically become focused on the pit, and whose very life (and death) was determined by monotonously regular shifts of hard labour deep underground (Strangleman, 2018). Social practices, Representations of space (how, for example, that village is conceived as centering around the colliery), and Representational space (space as lived) are forcibly combined to produce a space the only purpose of which is to produce coal for profit. Over generations these very limitations produced a resistant sense of identity and community developed with fellow workers whose bodies were subjected to the same demands, who experienced the same lives in narrow shafts of
confined space similarly, whose families were entirely dependent upon the wages earned down the pit (Samuel et al., 1986; Strangleman, 2018). This situation could produce a sense of solidarity, also inseparable from the routines at work, (and heavily impacting gender roles) of embodied and communal self-understanding in the face of abstract and extractive power (Carr, 2001; Burrell, 2017). It is in no way accidental that these tight communities were the very centre of anti-capitalist labour movements and yet, when capital moved on, as it inevitably does, and the pits closed, this sense of identity and community dissolved, the lived space of the pit village was left empty because it had been almost entirely shaped by that industries practices and by the modes of resistance to the life dictated by that industry (Samuel et al., 1986; Richards, 1996). The pit village then lost its reason for existence, its social space was entirely changed once again and evacuated of all its previous meanings as lived space. This too had been extracted with the flight of capital.

Such an example, speaks to the effects of mining in transforming social space that reverberate well beyond the life-time of its local activities, of the spatial deficit and legacy it leaves, as well as its initial transformations. And here a question arises about how to understand this in terms of sustainability. How would Brundtland even begin to address this in ways that might speak to social practices, the representations of village life, the lived experiences of the miners concerned? Are these communities that could or should be sustained given that they are entirely consequent upon of the past domination imposed by an industry that caused and is still causing immense climatic damage? Does regarding this in terms of a three pillars model, economic, environmental, and social, really help us understand what this space meant for those that lived in it and produced it or what sustainability means?
So, using Lefebvre’s theoretical frame we might begin to understand how damaging the attempt to completely determine spaces abstractly and ignore lived space can become. These, transformations and shaping of space according to the requirements of ‘concrete abstractions’ minimize the room for developing differential lived spaces in favour of developing efficient routes, technologies and profit maximization. Entranced by abstract space, urban centres become little more than grids while practically erasing communities on the periphery or those that resist re-development. The peripheral communities in question are both physically distanced from urban centres – sometimes on the other side of the globe – and are often those that have continued to practice a relatively non-accumulative ordering of space. Non-accumulative political economic orderings of space occur in societies whose productive and reproductive processes tend to be cyclical. For example, their use of resources and production of space is organized according to the cosmic cycles and the rhythms of nature (sunrise to sunset for the days, fall to summer for the months and years, etc.) (Lefebvre, 2014, 613 & 2004, 9). Their spatial practices remain relatively stable since their demand for space is solely determined by their needs for biological reproduction and the reproduction of their specific social relations (e.g. customs). This makes them appear stationary in comparison to the constant growth and large scale movements required by capitalism, but they are also often incredibly resilient and relatively sustainable because their very social organization is ordered to promote social cohesion in particular ecological settings (Lefebvre, 2014, 613).

Non-accumulative societies demarcate themselves from accumulative ones in terms of their socio-economic organization, but also in terms of the mode of their daily relations and activities: Marked by a lack of *instrumental rationality*, much of non-accumulative social and productive practices reflect a reliance on custom that itself follows cyclic world rhythms (Lefebvre, 2014,
Such ties to natural rhythms make these societies representatives of the few remaining modes of space in which a directly lived and embodied mode of social practice still dominates. Daily life carries this directness that fundamentally orders all of its relations. Crafts, resources, knowledge, etc. are all gathered for the community that is directly on-location. There is relatively little movement of goods and resources to market centres. Much of these, on the contrary, are gathered for local and direct use. Knowledge, for example, does not necessarily depend on the written word since these societies, unlike Western ones, do not fetishize the written word (Lefebvre, 1991, 28). Instead, elders share their knowledge through the practice of embodied habituation (i.e. use and performance) or oral communication (Lefebvre, 2014, 611-13). Oral communication and habituated use and performance are always related to the local community and never deviate because the doing and recounting of the past converge as teaching-doing of the present custom. In other words, the next generation learns from the performed reproduction of communal space because it lives it in its present. It learns the repetition of the communal social space by being inserted within it through practical participation in their community’s direct, embodied and local situations. Embedded within such oral custom is a specific manner of relating to the world: a non-instrumental manner through which space and its elements are not reduced to means to ends (tools or instruments) but to ends in themselves. As such, knowledge and technology are limited to direct use of the land as part of communal identity. Crafting, foraging, and agriculture constitute of much bodily and material habituation by each and every member of the community (Lefebvre, 2014, 611-13). Agricultural and foraging knowledge, for example, is not so much acquired through books in schools but through the use of tools and the experience of working soils (Lefebvre, 2014, 611-13 & 28). Said otherwise, an interesting form
of intimacy can be observed in Indigenous and non-accumulative communities’ relationships and use of their land.

A helpful example of such societies can be found in Elizabeth A. Povinelli’s *Geontologies: A Requiem to Late Liberalism* (2016). In her book, Povinelli describes the destruction and desecration of a rock formation *Two Women Sitting Down* by the OM Manganese mining firm in 2011. OM arrived on the land of the Northern Australian Kunapa people and removed the rock formation as part of its Bootu Creek mining operations in the area (p. 31-34). For the Warumungu-speaking Aborigines, *Two Women Sitting Down* (TWSD) was not just a simple ‘rock formation’ but quite literally two living ancestors of the community. Seen from their perspective, the mine’s search for the manganese outcrops found in the location of TWSD was to be read as its search for the two women’s blood (Povinelli, 2016, 34). According to Povinelli, kinship sociability within Wurumungu society imposes a very different condition on the circulation of things, humans, nonhumans, objects, narratives, ideas, and so on. The circulation of knowledge and its by-products is based on thickly embedded social relations that are constantly negotiated within and across the social categories that compose them and their territorial substrate and expression. No one is fixed in any singular identity, and humans are and can become nonhuman agents (when they die, they become nyuidj who inhabit the landscape, and when alive, they are already the descendants of specific kinds of post-human creatures) (p. 153).

We thus see a good example of the intimacy to be found in non-accumulative societies. With the Wurumungu, this intimacy is of the closest kind since, unlike in Western/abstract ontologies, there is no clear ontological differentiation between human beings and their spatial elements. Rocks, dirt, and what we would call ‘Wurumungu humans’ are all of the same people, they are
all Wurumungu. One can very well see what kind of socio-spatial practice follows from such an ontology: Suing the OM mining company for what was called a ‘desecration’ by Australian settler media, was actually perceived more as manslaughter or as a pursuit of TWSD’s blood since the community identified it as a full-fledged member of the community, a nyuidj. As such, there is no question of where embodiment lies in this ontology because each body may be discretely separated yet directly shares in the same Wurumungu being with all others. In this sense, then, to be a Wurumungu is to literally be one’s space. It is a recognition of one’s spatial belonging in the most radically literal sense. It is a sense of ‘space-being’ that bounds its members to a radical ethical bond in and through which neither can usurp the other. There is no allowing for TWSD to be bled since doing so would be breaking this bond and hurting oneself as well as past and future generations. It would make no sense whatsoever to the Wurumungu to separate out environmental, social and economic aspects of this space. To do so would clearly be an imposition of a colonizing ontology. Indeed, we might even make an argument that this space has been sustainable for so long – tens of thousands of years - precisely because these elements we not separated out – because economy was always incorporated in and subservient to the sustenance of that particular space which everything is party too.

Accumulative societies, on the other hand, are marked by the predominance of accumulative processes. Many activities and spaces have become directed and shaped by, for, and as accumulative processes and, as such, everyday life has become profoundly accumulative. Activities such as the pursuit of knowledge, the elaboration and use of technology, legalistic and bureaucratic politics are some examples. Given their context of capital accumulation, all of these activities share a character of striving for accumulation, (Lefebvre, 2014, 536). Knowledge and technology, in their different material and conceptual techniques (say, disciplinary methods) and
built spaces find themselves mostly cut off from non-accumulative processes that occur in our daily lives. Full sensory perception (i.e. more than just visual perception), sensibility, sensuality, spontaneity, artistic creativity, and morality (deriving from subjective and customary perspectives) are mostly left out in practice (p. 628-9).

Industrial extractive practices, we have seen, are among accumulative processes. They belong to a political economy which orders both space and time abstractly i.e. capitalism. The arrival of industrial practices and the production of extractive operational spaces follows the establishment of a global extractivist space which, as we saw in chapter 1 and 2, follows the establishment of capitalist-abstract space. The effect of this abstract spatio-material ontology is of a reduction to units either of resource or of lot. Each involving the other at all times as space becomes a resource and individual lots always involve the resources perceived to be contained within our mountains and earth in general. This ontology powerfully informs and directs capitalist spaces. It, however, does not have the same effect in non-accumulative spaces. Given its global presence, capitalism and extractivism have some amount of influence but have not yet completely taken over these spaces. Like clouds, it forms above the unoccupied localities still affecting the mount of sunlight they get. Once this abstract spatio-material ontology, in the form of extractive space, meets the non-accumulative spaces, we often notice a clash. Of course, spaces used to a modicum of urban development feel this differently than more radically non-accumulative spaces yet, even in these circumstances issues arise. These differences can be perceived if we compare the case of partly-urban mining operations with that of many Indigenous nations’ contemporary experiences. Though both are experiencing dramatic and often destructive changes caused by the same extractive regime (with some differences in national and regional legal apparatuses).
What we witness in the contexts of industrial mining in Ahafo, Yellowknife, the Indigenous Andes, and Wurumungu is the enactment and effects of a general disregard and thus blindness initiated by and through the accumulationist/extractivist regime. Consent is not simply disregarded but merely unseen, unthought, and thus unacted. What is enacted is the immediate silencing of voices through spatial incursion/invasion and occupation. As the cloud starts to rain down its direct influence (legal approval is met, state apparatus participates), communities are reduced to their abstract physical instantiations: their communal significance is replaced by treatment through maps of the town or village as their governance systems are transformed to conform to the expectations of mining companies. They are reduced to an ensemble of buildings and individuals living and/or working in them. A name on a map, a location of latitude and longitude with specific plots of land open for extraction and others closed because of their legal ownership by locals, etc. Only the people living on location may grasp what their space truly means, yet even they begin to have difficulty expressing this. Their own relationship to the community is rendered problematic as they find themselves overtaken by extractive projects which are often organized and funded by Multinational extractive corporations generally with the support of national governments. What is one lonely community’s voice against the global loudspeakers of multi-trillion-dollar business organizations?

The act of extractive occupation is reminiscent of the swift military tactics of occupation seen during acts of war: the adversary is overtaken by secretive planning, some locals (such as state officials and police forces) betray their community and provide services to the operation, and then, with little to no warning, people are removed from their homes (Ahafo), their land is poisoned (Dettah), and their mountains are mutilated (the Andes). Local communities not asked to consent, immediately find the link between their lands and community torn asunder. What
begins with the sly and almost secret erasure of their rights under the cover of the accumulationist cloud, culminates in the attack on the community’s spatial existence. Though the communal space does not disappear, it does find itself severely repressed by what Lefebvre refers to as a “display of military and police-like machismo, a reference to the phallus and a spatial analogue of masculine brutality.” (Lefebvre, 1991, 146) Even spaces that will not look like it may still be felt as repressive. This is observed in the fact of the mining company’s ease at occupying space and the shocking uses of state violence to repress active dissent (Mares, 2012; Carreño, 2017, 143; Earthworks, 2019).

No matter what angle we choose to interpret space, we shall continue to witness the incredible weight of industrial extraction on our spaces. Our communal spaces are constantly transformed into their repressed forms since we still find them mobilized according to a certain strategy: For Lefebvre, the “mobilization of space for the purposes of its production makes harsh demands,” land is “wrenched away from the traditional form of property,” and forced into the meaning-giving of exchange value (Lefebvre, 1991, 336-7). The community can gain concessions only if it agrees to the new regime and acquiesces to the transformation of their space into its abstract reductions. If they do, the space loses its importance and identity as a place of deep significance. No longer a space marked by custom and communal spatial practice, it devolves into nothing more than a position on a map, a site of a resource, another place to live among millions of similar ones. The space’s newfound homogeneity opens it up to a mobility for goods and people. These aspects may indeed be seen as a freeing, as an addition of freedoms for individuals etc. It, however, does not become so for all people involved and does so in varying degrees depending on the local contexts.
In the context of the Indigenous communities in the Peruvian and Bolivian Andes, industrial mining has been enabled by the denial and repression of Indigenous beliefs in the agential and world-building character of specific mountains (Carreño, 2017, 134). Though certain communities have decided to organize their own form of mining in some cases (see Hirsch, 2017), most other mining projects have been met with rigorous and recurrent Indigenous challenges. The Andean mountains, for these communities are agential community members to be respected. Mining them without asking permission is described as an unfair theft along with mutilation of their body (Carreño, 2017, 138-9). Mutilating these mountainous bodies is interpreted as an attack on the Andean community in general. The disappearance of entire mountains because of the practices of open-pit mining is interpreted as the murdering of a communal agent and ‘lord’ of the community (Carreño, 2017, 133). Open-pit mining is most often seen to render mountains infertile, and unable to sustain life (p. 138-41).

We see the most vigorous resistance to industrial mining in such non-accumulationist communal contexts: The community itself is denied its meaning as a physical but also more-than-physical entity. In the Andes, Indigenous communities often embody themselves partly through the embodiment of their undergrounds and mountains on and near where they live. Many communities that have rejected mining have done so specifically for reasons of the breaking of consent by state and private apparatuses. A space-being (underground or mountain) that has not reached this level of destruction, is yet well on its way of losing its ability to sustain life and has thus become an unliveable space. Seen abstractly, the village or town still exists as that ensemble of buildings and people, but the loss of fertility or death of a mountain strikes a definite blow to ways of life that have persisted for millennia.
As such, for many communities around the world, anti-mining organizing and activism takes less the air of ideological manoeuvring or posturing as much as a struggle for a mode of lived experience. Industrial extractive space’s invasion and occupation of Indigenous spaces is a continuation of colonization and exploitation. Indigenous community spaces are prime examples of spaces of resistance and can be looked up to by those in the world who wish to continue struggles against an abstractive mode of interpreting the world in general. Indigenous and non-accumulative community spaces present us with what Lefebvre called ‘differential spaces’. These are spaces either abandoned, unoccupied, or resisting the occupation by the homogenizing, fragmenting, and hierarchizing spatial ordering of abstract-capitalist space (Lefebvre, 1991, 282).

In defending their own right to exist under their own terms and, thus, the need for their consent, Indigenous and non-accumulative spaces present us with examples of alternative spaces and with practical action in the creation of difference and defence of what Lefebvre termed the ‘right to difference’ (p. 396).

In their struggle for their right to difference, Indigenous and non-accumulative spaces accentuate the possibility for a global differential space since their wish for their own spaces can only find logical significance in a larger space that accepts difference in the first place. In order to advance their causes, these communities reject the very foundations of abstract-capitalist space including the notion of private property as it is given through the legal institutions of the state apparatuses (p. 396-7). Their use of land, we see in the cases of the tribal use in Ahafo and the Andean cosmologies, which conceive of the underground and mountains as full-fledged rights-bearing beings, depends on non-accumulative social organization and thus spatial practice. It is, in this sense, the very activity of difference in their enacting of spaces and time. These communities are extremely interesting examples because their very being and struggle for the
continuation of their being represents the continued defence of all communal liveability throughout the globe.

Urban differential spaces may indeed be important for the enactment of difference, yet their lack of endurance is particularly pronounced. We see this very well in the example provided by Lefebvre himself of the carnivalesque occupation of *Les Halles* (Paris’ main marketplace) in 1968 (Lefebvre, 1991, 56). Although the experience of such an occupation may have brought to light a new form of spatial expression in Western urban centres, it failed to establish something long-term (p. 56 & 386). It was a spark in a still-enduring night of abstract spatial formations. We see such a thing happening with those Indigenous spaces confronted by the extractive industry. Though their spaces continue to be besieged by national governments and the industry, though their mountains and undergrounds continue to be pillaged, their struggles continue against unliveability.

The problem, however, for these communities is that they suffer from the same isolation that keeps them from joining into abstract-capitalist space. In the context of their resistance to extractive and state forces, they have become enclaves of resistance only to be seen by the most interested international or national activists, and caring researchers. Corporate media mentions them only fleetingly, as long as there is a story to be exploited, etc. (Mares, 2012; Cott et al, 2016; Sandlos and Keeling, 2016; Roadhouse & Vanclay, 2016; Jamieson et al, 2017; Carreño, 2017; Earthworks, 2019). This makes it difficult for Indigenous and non-accumulative spaces to expand their differential enclaves to a global space such that they may enjoy their right to difference. It will thus be crucial to realize, as does Lefebvre, that the creation of long-term and global differential space requires a general and global struggle that affects all aspects of everyday life. This means that much more than political regime change is necessary. A more fundamental
and global change of mode of production, and spatio-temporal practice in all its forms must occur.

Without such a generalized and simultaneous urban and non-urban enacting of differential space, i.e. of space that lets differences exist and be generated, the extractivist and accumulationist forces fail to lose their initial thrust. Urban routines being unchanged, markets continue to demand minerals. In such a context, abstract space continues in its attempts to homogenize spaces and subdivid them through the commercialization of land and the specialization of specific spaces for specific productive/consumptive outputs. If difference is to be achieved, even temporarily, then it cannot be an isolated affair, and it certainly cannot function according to abstract space’s hierarchizing of spaces into peripheral and central zones of importance, with the urban being followed by the semi and non-urban spaces. What must be realized, I think, is that Lefebvre’s right to difference leading to the right to the city should essentially be read as a right to community. For Lefebvre, the right to the city specifically seeks to guarantee access to public services and to autogestion or self-organization and rule (Lefebvre, 1996, 63-181). That this occurs in a city is a secondary matter. What must be realized by both urban and non-urban users is that the main aspect Lefebvre deplores in the abstract-capitalist perversion of space into the phallic, overly-visual, and destructively reductive geometric/quantitative approximation of it, is what we have found to be industrial extraction’s effect of destroying community. That is, its destruction of the form of community that organizes and rules itself according to collective needs and uses. Once this is accepted, we no longer get

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3 Lefebvre identifies a powerful phallocratic streak to the Abstract-Accumulationist mode of apprehending space. For him, this streak is expressed in modern space’s propensity to interpret and build spaces according to an “arrogant verticality” (1991, 98). Visualizing space according to verticality fetishizes reading space from ‘above’ i.e. with maps or from the sky or by building tall skyscrapers in order to impress and convey authority, dominance and control for those living and managing what goes on in the lower levels of space. Such a use of space is heavily dependent on the sense of sight and on the belief by users of space that the geometric/cartographic visualization of space is neutral (1991, 98-9).
lost in the particular denominations of the ‘urban’ or ‘rural’ or ‘non/partial-urban’. Our undivided attention is brought to the communities or social groups in and through which we exist. We locate our global community in each instantiation of self-organized community.

In this sense, a differential community comes to be any community that keeps differences alive and that organizes itself spatio-temporally without the need for an overly abstract and accumulative form of production and reproduction of social relations. Concretely speaking, this means a dramatic change in the daily lives of people which alter their consumption and production to make capitalism and extractivism disappear. These would be replaced in the urban world by daily practices which minimize demand for minerals (such as circular economy of reuse, repair, recycle i.e. three Rs) (Allan 1995; IIED & WBCSD, 2002; IISD 2002; Buxton 2012). Mining would certainly not disappear fully, though, as the possibilities for reuse, repair, and recycling are always limited by wear and breakage. But, most important to all of this is that an global economy of the three Rs absolutely depends on a space that enables their logic. In other terms, with the new form of organization, will require new and more diverse spatio-temporal existence: and this existence, as we see in Lefebvre’s writing, seems to be none other than one that will reflect the lived or embodied reality of the users of time and space.

Although the context of extractive spaces can be a particularly violent one in the many social and spatial ways we have mentioned, it is in this context that we find an opening for new possibilities. Though mining is ultimately a destructive act in the sense that it is the removal of minerals from a previous space in which they were at rest, this does not make every form of extraction equivalent. We have been discussing extraction, here, but only in its industrial form. However, as chapter one argued, anyone versed in the history and contemporary practice of mining will know that its industrial practice is quite new. Small-scale mining is another form of
mining that continues to exist all over the world (Lahiri-Dutt, 2018, 1-5). As I will attempt to demonstrate, it may be possible to find a differential form of mining in small-scale instantiations of its practice.

There are, however, some precautionary comments to be made: As a designation, ‘small-scale’ mining does not always refer to the case we shall soon ponder. Indeed, as can be understood, the ‘small’-scale is a very ambiguous name and can be used to refer to a diversity of practices. That an operation is small scale does not make it non-industrial or un-tied to large-scale market extractivism (Lahiri-Dutt, 2018, 1-5; Uran, 2018; Le Billion et al, 2020). It is also very common for such enterprises to be run for profit and to yield little to no return for the miners involved (Lahiri-Dutt, 2018, 1-5; Uran, 2018; Le Billion et al, 2020). This is why what I shall be pointing to as a potential differential space of extraction are the cases of ancestral and artisanal mining. Ancestral mining is defined as a non-industrial and small-scale form of community or family-based extraction (Uran, 2018; Le Billion et al, 2020). It is often linked to artisanal mining because of the similarities these can have. Both are smaller scale than that industrial mining. They are spatio-temporally different: operations can last multiple generations while, generally, industrial extraction lasts at most a few decades (Uran, 2018; Le Billion et al, 2020). Artisanal and ancestral mining also occurs within or for a community’s continued livelihood. This means that there is a deep qualitative difference between industrial and artisanal and ancestral forms of extraction, one is anchored to a specific place and to a community while the other temporarily occupies land, transforms it, extracts what it needs and then leaves.

The case of interest here is that of the Afro-Colombian community of La Toma located just a few kilometers south of the town of Suarez near the city of Cali in eastern Colombia. Presented in a documentary produced by the celebrated filmmaker, Hollman Morris, La Toma is home to a
community of ancestral gold miners who have been mining in the area since the mid-1630s (Minority Rights Group, 2020). Generation after generation learns from their community elders in order to perpetuate a 400-year-old tradition of mining. The point of such mining, according to community members is not the accumulation of wealth, but to allow general subsistence. With mining, the community is able to provide enough so that members pursue post-secondary education while others may take up mining themselves. Those who do take up mining, follow a strict tradition of hand tool use with attention to the environmental and social ramifications of their extraction so that they leave an untapped underground heritage for future generations who will need to meet their own needs (Minority Rights Group, 2020). However, like most Afro-Colombian ancestral mining communities in Colombia, their practice remains unrecognized by regional and national governments who continue to supersede the community’s rights to the land while distributing land titles to large mining corporations (Minority Rights Group, 2020). Recent years have seen ancestral miners and community organizers increasingly targeted by violent paramilitary groups: brutal killings and death threats have increased in attempts to force community members off their land to make space for multinational corporations such as Anglo Gold Ashanti (Human Rights Council, 2014).

Attacks and threats notwithstanding, La Toma’s community continues to endure as it has for 400 years. Part of the community’s strength comes from their communal organization and relative independence. Because their form of mining remains unrecognized, the La Toma has been forced to rely on its own communal devices: they have built their own economy even though it is considered illegal or anti-patriotic to do so (Human Rights Council, 2014). That is, they have forgone their own national belonging to enable that of their immediate community. Such behaviour, accompanied with their practice of leaving gold unmined for future generations
(i.e. refraining from accelerating the mining process) lends itself very much to aggressive extraction strategies. For although it is the case that their practice displaces irreplaceable minerals from the underground, theirs is not a practice of ever-accelerating and ever-more-destructive extraction. It is an extraction based on cyclic community rhythms based on care for the land and its use by future users. Theirs is also not a practice dependent upon community displacement but instead on community anchoring. La Toma’s differential space is one established accordingly with the belief that the community is intimately tied to the land. The land is not a lot to be owned or disowned, it simply is the community just as mining is not simply a practice for economic subsistence but a customary/cultural practice (Human Rights Council, 2014; Lefebvre, 2014, 613; Minority Rights Group, 2020). There is no dissociation possible.

La Toma provides a compelling case for those of us looking to find an alternative to industrial mining and its accumulationist extractivism. What we find is that mining can be used for good if and only if its practice is circumscribed by a non-accumulative communal socio-spatial logic. Without this, extraction devolves into a market practice of corporations competing for limited spatial elements in a manner that, even if does not begin as such, will become destructive.

Communal perspectives shall be minimized and then communities physically displaced for increased productivity and profit. La Toma demonstrates that communal self-organization (autogestion) can yield a tested form of resistance to corporate and state encroachment. It also provides a sure strategy of imposing the need for consent by refusing to be made a victim of corporate interests. Mining is, thus, severed from the practice of accumulation. The two are no longer co-referents since the community can demonstrate that it is already meeting its own needs without needing the help of industrial methods and interests. Sticking to its own ways, the community practices its own lived experience as this (mining) continues to be a use of space.
filled with symbolism. Every strike into the earth is a communion with 400 years of history in the same space, for the same purpose.

Nevertheless, as per my prior comments, it would be foolish for us to accept La Toma’s on its current terms of resistance. La Toma’s success in developing a space in which it will not have to worry about encroachment, murder, and theft cannot possibly be established unless there is a global return to more localized, spatio-temporal, communal logics in daily life. Without this, without an urban commitment to a political economy that turns in on itself to draw up and draw out its own forms of reuse, repairing, and recycling from the perspective of everyday life, then all La Toma can be is an island surrounded by an ocean of extractivist predators. Urban centres must also cut themselves out of the abstract-capitalist space of ever-increasing demand. Urbanity must, in other terms, reoccupy itself and refuse to surrender its built spaces to the market. It must do what was done in *Les Halles* in 1968 when Parisian citizens wrested the marketplace from its commonly accepted function. Its new function will have to be that of a prioritization of direct *users* and *inhabitants* of that space.

Briefly peering through the social spaces of the Wurumungu Australian aborigines and the Afro-Columbian community of La Toma, we see examples of alternative ways of using and inhabiting space: Land, though experienced very differently between the two communities, bears the similarity of not being experienced as a fundamentally separate thing. On the contrary, the land, and everything that occurs on and within it, is considered fundamentally indissociable from the human. Neither community is willing to consider itself as separated from the land. Its past, present, and future existence all involve it. Spatial elements such as ‘rock formations’ (as we know them in the West) are living family members for the Wurumungu while La Tomans perceive the land as a communal heritage that must be mined with care and patience. Both, in
their own senses, refuse an accumulationist ideology which categorically and coldly separates the human/agential from space with its geometric and quantitative representations of it.

Much could be learned from their ways of inhabiting their communal spaces by urban resisters of accumulationism. Their ways of inhabiting their spaces as a part of themselves could allow for a radical rethinking of our relationship with space being less of a *use* and more along the lines of a *being* of space. Considered in such a light, space no longer retains its deadened, box-like status. It is instead revived as something with which we have a relationship and which has a behaviour and effect of its own. Social space is thus literally recovered as a product and a producer of continuous socio-spatial relations since it is now accepted back into the communal fold.
4. Concluding Remarks: Rethinking Sustainability Spatially
Avenues for Further Research

Approaching spatial relations with eyes to allow socio-spatial differences to endure and multiply is easier to imagine when we have such compelling examples as the Australian Wurumungu and Afro-Columbian La Toma. With these, we are given a glimpse of many possible alternatives to spaces dominated by accumulationist extractivism. They exemplify spaces through which either Ancestral mining or a strict refusal of mining in certain localities may occur. It is a space of respect for the particular forms of collective consent and dissent spaces, lacking the constant badgering exhibited by governments and mining companies who prey on isolated and oppressed communities. More specifically, such a space involves a ‘letting be’ of the community through a letting be of non-accumulative communal spaces. It rejects the moves to identifying communities through their abstract-capitalist representations and instead propounds an acceptance of their difference. It inaugurates the possibility of innumerable old, new, and different modes of apprehending space by reprioritizing the perspective of the users and inhabitants who intimately engage with and produce through their own customary modes while encouraging urban users and inhabitants to reconnect with their own spaces.

Though Lefebvre never tackles the question or concept of sustainability, his critique of abstract-capitalist space allows us to consider the inherent contradictions within contemporary sustainability discourse. As we have seen, CSR theory, which borrows heavily from Brundtland’s definition of sustainability, remains unaware of, or uninterested in, many lingering issues. As it is initiated by and often dependent on industrial extractive operations, it simply accepts an accumulationist context and stance that is not necessarily shared by the communities it claims to help. This contradiction within CSR can be traced back to Brundtland’s vague
definition of sustainability as sustainable development that takes equal consideration of questions of social equality, economic growth, and environmental protection. Analyzing space in a Lefebvrian light helps us see that setting these aspects of sustainability on equal footing is quite problematic: Firstly, it is clear that abstract-capitalist social space does not allow this to occur in practice since marginalized communities are often disrespected and mutilated by the hunger for extracted resources and capital. They are forced into spaces unfit for their ways of being. Capitalism engenders its own kind of spatial violence (literally obliterating some spaces, transforming others into the same abstract patterns) as well as employing actual violence on peoples when deemed necessary, possible, or efficient. Its insatiable requirement for an ever-expanding resource ‘base’ and ever-increasing levels of spatial dominance and transformation, require and result in a kind of spatial homogenization, albeit rendered at different scales and with different levels of ‘comfort’ depending on income and the effects of specializing, and peripheralizing or centralizing spaces based on an always unequal distribution of social tasks, functions, and environmental affordances. These spaces (which Lefebvre already recognizes) may be those the affluent are familiar with (the fast food emporium, the car lot, the airport building, the office block, the cookie cutter suburban home, etc.) or those that the less fortunate are forced to inhabit, the slums and shanty towns of the so-called ‘developing’ world.

Secondly, as we have seen in chapters 2 and 3 with our discussion of lived, non-accumulationist, and differential spaces, a full perception of space as a dynamic dialectical intersection of spatial practice, representation of space, and representational space suggests that the elements of the three pillar model are inseparable. Questions of social welfare are always already linked to environmental and economic ones. Of course, to separate them may seem useful because it allows us to insert specific issues or questions back into already-existent
discourses on economics and the environment, etc. Doing this, we hope to mobilize existing experts in the science, policy, sociology, and economics. However, it is exactly therein that we witness a crucial issue: namely, that the reality of our economic, social, and environmental spaces is that they are always already linked and we need them to be livable. It is not at all hard to see that the production of our spaces and their effects back onto us are inherently tied to the manner in which our communities reproduce themselves (i.e. their mode of spatial production). *If that mode of production is not itself sustainable, then these spaces will not, indeed cannot, facilitate sustainability.*

Using Lefebvre, we can see the trap that lies within Brundtland’s three pillars of sustainability. Proposing them as separate pillars is a dangerous display of abstraction that would have us accept abstract-capitalist mode of spatial practice for the sake of ‘freeing’ so-called developing countries from material poverty. We can provide abstracted data for each realm, offer environmental, economic, social, solutions for each aspect of every problem, but if the spaces are increasingly organized according to the same universal and abstract principles, these problems will also proliferate, and solutions in one realm will not be coordinated with solutions in others. How could they be? Sustainability too requires and reproduces certain kinds of (livable) space. No matter how little a space pollutes, destroys or saves, it cannot be deemed ‘liveable’ if the violent legacies of the space of death that are slavery and Indigenous genocide (Yusoff, 2018), the disregard for communal consent in enclosing land (Overton, 1996) and setting up extractive operations are maintained. With Lefebvre, we see past the claim that such strategies were fighting a kind of poverty or lack. We see them for their effects as tools of dispossession and of desecration of the very thing that brings any meaning to our economic practices, namely the community. Community, experienced as the space of convergence of our most intimate, *lived*
relations, of our identities and responsibilities, proves to be a powerful medium through which we can define continued social practice. What could there possibly be left to sustain if our mode of production disrupts and erases the mediums of our own social belonging? The answer is nothing. For it no longer make sense to be sustainable when we have lost sight of or destroyed that which held us together.

If thinkers of sustainability follow in Lefebvre’s footsteps and rethink their interpretation of social space, then they may come to critically reassess those strategies that continue to suggest the possibility of a just and sustainable form of capitalism. For, sustainability would not be able to be reduced to quantities of poor, units of available resources, and the need and opportunities for economic growth. Non-accumulative societies such as La Toma and Wurumungu are great examples of societies that have sustained themselves for centuries, indeed in the case of the Wurumungu for many thousands of years without needing to fulfill or use such metrics. Theirs is a sustainability built into their mode of inhabiting space: it is an intimate living of space i.e. a being of space through which all of social, economic, and environmental are experienced as the community. As such, the two communities constitute compelling examples for rethinking our own spatial practices and the possibilities they provide.

Such thinkers must, however, beware of using Lefebvre without critical eyes to his own failings. Once again, it must be reiterated that, for all his usefulness in thinking space Lefebvre too is, in part, himself a product of a certain mid-Twentieth Century European social space. His ways of conceiving space are closely linked to this and so his views are imbued, for example, with the redolent humanism that makes it obvious to him that the only active producers and users of spaces are humans – social space is a social product. But this is clearly not the view of the Wurumungu, or perhaps of more recent contemporary Western society more influenced by
environmental concerns, ecological approaches, and where the emergence of the (fossil fueled) Anthropocene is revealing further limits to modern social practices, representations of space and representational space. Lefebvre almost entirely fails to provide an interpretation of space that considers human relations with the non-human natural environment. Lefebvre’s humanistic streak makes him unable to perceive nature as more than the non-human wilderness of forests. And these Lefebvre sees as disappearing in the rearview mirror as modern human societies thrust forward in the opposite direction (1991, 51). Humanity, is very much destroying a nature defined in this modern Western way, as it reduces it to nothing more than a resource depot from which it can take without restraint (p. 70-1). Nature, for Lefebvre, stands alone as something completely other to humanity. To make use of it as just a means of production (no matter what that production or reproduction may entail) redefining creation as a predominantly human capacity (p. 83), ignores the non-human world’s own creativity, the way that nature produces and reproduces spaces with and without human beings.

Such a perception of nature is quite problematic for the purpose of sustainability which would use a vision of community that does not denigrate or categorize the world abstractly. Theorizing natural space as he does, Lefebvre reifies an unnecessary distinction between nature and culture and thereby forecloses the possibility for the kind of differential society that intimately binds itself with non-human creativity as the La Tomans and Wurumungu do. For Lefebvre it is almost as if humanity could keep on existing while nature ceased to exist. Lacking a clearer analysis of its intersections with human socio-spatial reproduction, it can be difficult to see how Lefebvre differs from the resource-based approach that everywhere predominates. In a more extended thesis it would be important to put Lefebvre into conversation with such thinkers
of materiality as Elizabeth Povinelli and Kathryn Yusoff who push the boundaries on such an intersection (Povinelli, 2016; Yusoff, 2018).

Criticisms can also be made of Lefebvre’s relative lack of interest in marginal or peripheral spaces such as that of non-western and non-accumulative societies. Although he touches upon these concepts, he fails to mention examples of contemporary societies that continue to resist and offer new possibilities of resistance against abstract-capitalist space. His own writing on examples of differential and resistant spaces only mention examples found in urban spaces such as the student occupation of Les Halles in Paris in 1968. This is where the work of thinkers such as Yusoff with her explicit uptake of the Atlantic Slave Trade’s relation to resource extraction are so very important. Yusoff, effectively re-centers the critique of extractive practice in marginalized spaces.

Ultimately, however, all of these works could add to Lefebvre’s theory of the production of space and his criticisms of abstract-capitalist space. Though limited in a number of ways and in some respects showing its theoretical age (The Production of Space was first published in 1974), Lefebvre’s theory still provides a radically different critical perspective and starting point for those within the West who want to question their own mode of socio-spatial production. It provides a compelling alternative interpretation of space away from the abstraction that has permitted a distancing of ourselves from our spaces and led to the pillaging of entire continents through the dispossession of millions around the world. Supplied with these voices, Lefebvre’s theory can only be improved.

All is not lost with our rejection of Brundtland’s definition of sustainability. We may still be able to reformulate a definition through a thorough examination of the sustainability literature which has strongly criticized the former and moved well beyond it (Farley & Smith, 2020). We
do not have the space to enumerate them all here. Nevertheless, a direction of interest is provided by Heather M. Farley and Zachary A. Smith’s *Sustainability, If It’s Everything, Is It Nothing?* (2020). In their last section, the authors develop the idea of Neo-sustainability which they define as “the ability of an activity to sustain a system by improving its quality and operating within its limits.” (p. 152) This definition sets us up with three important rules that must be followed in order for a practice to be considered sustainable: i) there are limits to growth, ii) these limits are dictated by the environment and, therefore any action within ecological systems must strictly adhere to their carrying capacities, and iii) because the environment, economy, and social systems are all *nested systems*, we must apply systems thinking which can account for the multiple levels of impacts and influences. Broken down into these three rules, we witness the critical influences of neo-sustainability.

The idea of limits to growth was successfully promoted by such thinkers as Georgescu-Roegen (1971) and Herman Daly (1987). This first rule is taken as an axiom and is then directly connected with the second rule which re-prioritizes the natural environment as the ultimate setter of our systemic limits and capacities. The primacy of the environmental, has itself been demonstrated as fact by many (see Georgescu-Roegen, 1971; Daly, 1972; McLaren, 2003; Adams, 2006; Bruyninckx, 2006). The doctrine of environmental limits formed by the two previous rules then ties in with a final rule which, interestingly enough for our purposes, proposes that a sustainable action will be one that recognizes the indivisibility of the environmental, economic, and social systems and the necessity for action to reflect the fact that these spheres are essentially one system. To deviate from this approach and posit (as Brundtland did) that we must prioritize the economic sphere is simply to deviate from sustainability as it denies the fundamental fact of unity our world and our ways and actions in the world. Such a
definition of sustainability shares a direct affinity with a Lefebvrian approach because of its third rule’s systems thinking approach which demands that we think of different elements of life as one system. Such a view resonates well with Lefebvre’s approach to space which attempts to think of the world in a more unified sense as it is lived. The examples of the La Tomans and Wurumungu provide great demonstrations of societies which follow these very rules in their own ways. In this sense, then, we may begin to envision how future work can form a Lefebvrian theory of the production of sustainable spaces by putting our current discussion of alternative spatializations in conversation with neo-sustainability.
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