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Meanings of Mining

A political ecologist' approach on the regulation of artisanal and small-scale gold mining in Southern Ecuador

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International Environmental Studies

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Declaration

I, Gard Frækaland Vangsnes, declare that this thesis is a result of my research investigations and findings. Sources of information other than my own have been acknowledged and a reference list has been appended. This work has not been previously submitted to any other university for award of any type of academic degree.

Signature…….Gard Frækaland Vangsnes
Date……18th of May, 2016

To all the hard-working miners of Portovelo-Zaruma

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All remaining errors, inadequacies, and shortcomings are, of course, solely my responsibility.

Abstract

This thesis is concerned with the regulation of artisanal and small-scale mining in Portovelo-Zaruma (P-Z) in the South-Western corner of Ecuador. With the use of political ecology and an ethnographic approach I argue that there are substantial shortcomings to the existent apolitical research on this context and the governmental regulation that is informed by the latter. The thesis analyses the historical trajectory of mining activity in Porto and how it evolved into its current composition. It is argued that the co-existence of different forms of mining is the bedrock for a highly complex situation which governmental regulations struggle to acknowledge and effectively confront. The thesis follows this complexity with a focus on the enforcement of regulation and the responses it creates in the local setting. I argue that current governmental regulations are: 1) problematically affiliated with natural science blaming artisanal miners for the environmental degradation, and 2) representative for a rationality of corporate social responsibility. The outcome of this leads regulators away from acknowledging internal power relations and the political dimension in which this resource governance is embedded. Accordingly, I expose these relations and situate their respective claims and dynamics in divergent epistemological traditions. My objective in this thesis is three-folded: 1) to confront and complement the dominance of apolitical research that obscure the socio-political complexity of the field, 2) to expand on the theory of interlegality in contexts of artisanal and small-scale mining, and 3) to highlight and recognize the importance of situated perspectives in the tradition of political ecology

Abbreviations and acronyms

ASGM - Artisanal and small-scale gold mining

APROPLASMIN - Association of Owners of Processing Plants (*Propietarios de Plantas de Beneficio Mineral de El Oro*)

ARCOM - Agency of regulation and control of Mining (*Agencia de Regulación y Control de Minería*)

CODIGEM - Corporation for Development and Metallurgical Geological Mining Research (*Corporación de Desarrollo e Investigación Geológico Minero Metalúrgico*)

CSR - Corporate Social Responsibilty

DGGM - Directory of Geology and Mines (*Dirección General de Geología y Minas*)

GEF - Global Environment Facility

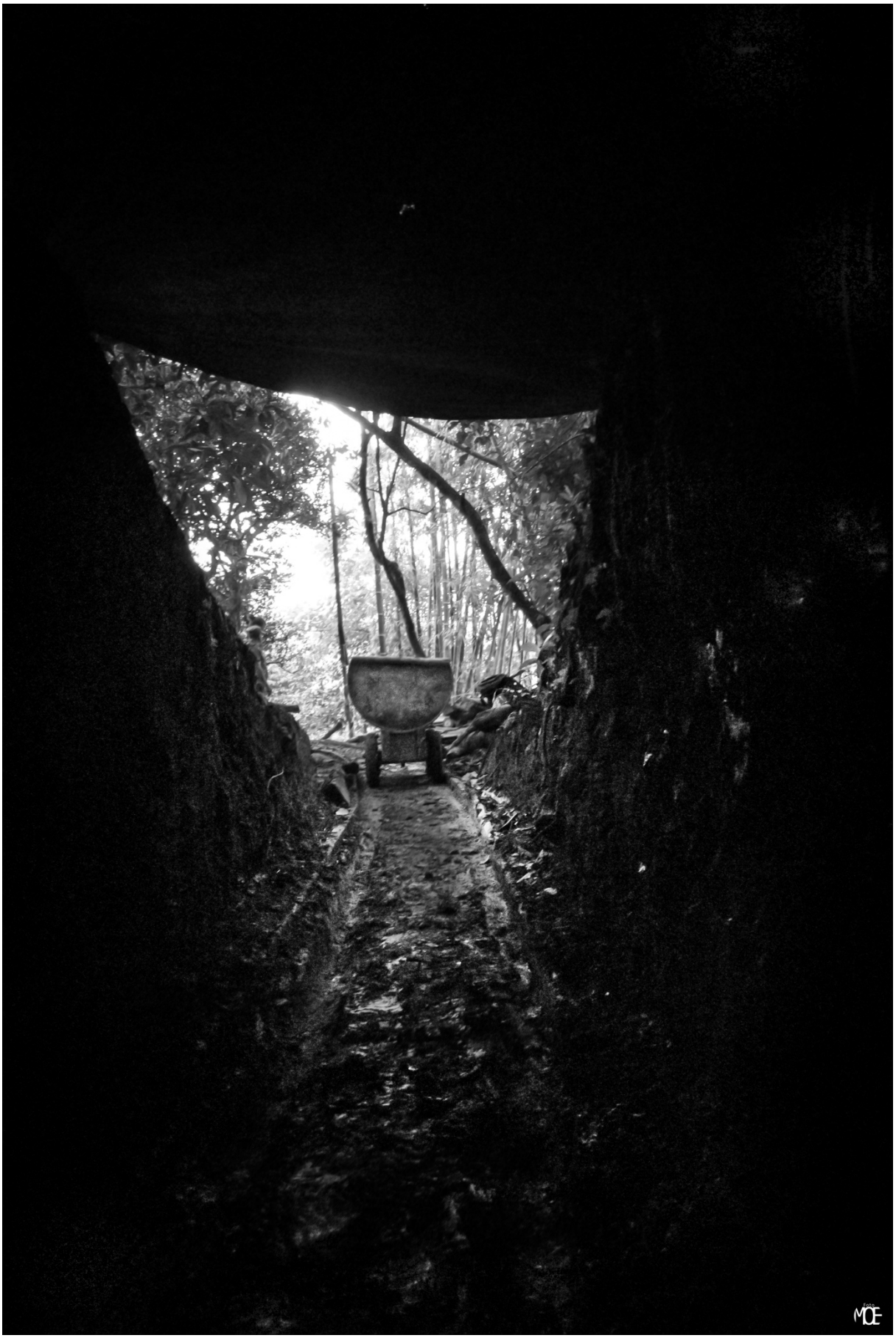
IESS – Ecuadorian Institute of Social Security (*Instituto Ecuatoriano de Seguridad Social*)

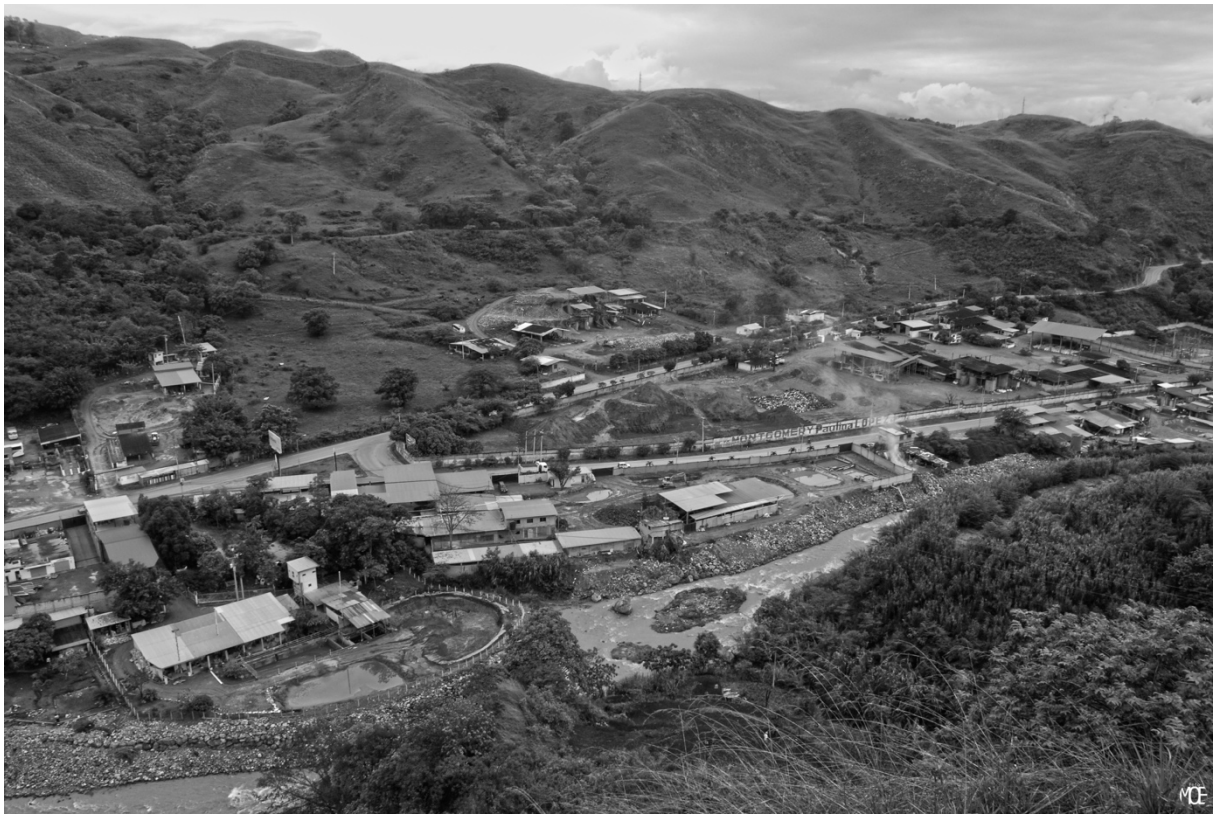
INIGEMM - National Institute of Metallurgical and Geological Mining Research *(Instituto Nacional de Investigación Geológico Minero Metalúrgico*)

MAE – Ministry of the Environment (*Ministerio del Ambiente*)

SRI - Ecuadorian internal rents/tax service (*Servicio de Rentas Internas*)

UNIDO - United Nations Industrial Development Organization





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I love the smell of Napalm in the morning
- Lieutenant Kilgore in *Apocalypse Now*

INTRODUCTION

During the morning hours we visited a mineral processing plant that was closed down some weeks before due to an observation of poor membranes in the tailings ponds. This was fixed by now, the pools were safe with new membranes, and the only minor critic was that they were not properly fenced. The young man representing the owners of the plant told us that the plastic banners, required as fencing, had been consumed by the sun and the wind. And yes, we could see the leftovers all around. He assured us though, that he had bought new ones and was going to set them up the next morning. ¨No problem¨, said Juan, the young ARCOM (Ecuadorian Agency of Regulation and Control of Mining) inspector that I accompanied on this occasion. This comment saying ¨no problem¨ was important for the man representing the owners of the plant. In fact, the re-opening of the plant was entirely dependent on ARCOM´s approval that measures had been taken to improve the tailings ponds and, generally speaking, that the plant was reported as appropriate to operate. So far the inspection seemed promising.

The problem on this occasion however, was not the processing plant we visited, but its neighbour. They were both located on the riverbeds of Rio Puyango along with a number of processing plants, yet poorly delimited into separate areas. Without any real enclosing, our visit included an overview to the neighbouring plants. Accordingly, when we reached the river and paused for a minute to look at some excavators digging beside and inside the

riverbed, the three of us noticed a pipe releasing greyish water from the neighbouring plant. The three of us knew that any dumping of tailings into the river, either liquids or solids, was illegal and one of the activities that had been subjected to the strongest attention from the authorities. The reasons for this are multiple, but essentially and logically related to the well-being of downstream communities that depend on this water. This water has been reported to contain methylmercury, sodium cyanide, lead, arsenic and several contaminating properties for decades. Moreover, as the Puyango River eventually enters Peruvian territories, where it provides the Tumbes region with crucial fresh water on its way to the Pacific Ocean, the contamination of its headwaters has created a geo-political tension between Ecuador and Peru.

It took about ten seconds before we reacted. Juan, the ARCOM inspector, picked up his camera and went straight towards the pipe releasing wastewater. Meanwhile, I and the young man were in the middle of a conversation, yet upon noticing Juan approaching the pipe to take pictures, he immediately grabbed my arm and directed me some steps away from the site. ¨Come over here ¨ (*Vente por acá*), he said a bit worried. ¨That is illegal you know and… the boys will take me for a snitch¨[1], he said referring to the possibility that workers from the neighbouring plants might observe him here with ARCOM and, in the case of a sanction, add two and two together. He then continued to explain to me:

> Look brother I´ll tell you how things are run down here… Here most of the mining is informal and illegal…I have at least six or seven friends who work without any permissions and…that's how things have always been around here. Now, currently ARCOM is messing around with this, and, well, we have to do things according to the law, but regardless of that I do not want to be taken for a snitch…[2]

We continued to talk about the current state of affairs surrounding the mining activity, maintaining an informal conversation until and after the ARCOM inspector returned from taking his pictures. After that, the observation of the pipeline releasing tailings/wastewater was not discussed. We all knew what it meant and also the potential consequences for the responsible processing plant (immediate closure). The young man continued in his jovial tone and redirected the attention to the improvements in *his* processing plant, once again assuring

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[1] *Es que después me cogen por sapo…no ves que esa nota es ilegal…*

[2] *Mira yo te cuento como es la cosa aquí hermano…aquí la mayoría de la minería es ilegal e informal…yo tengo seis-siete amigos que trabajan en minas sin permiso y así siempre ha sido la vida aquí. Ahora ARCOM esta que jode con esto y ya pues hay que cumplir con la ley, pero tampoco quiero quedar como sapo…*

the ARCOM inspector that he would put up the plastic ¨WARNING¨ banners around the tailings pools first thing in the morning.

Once back in the car, the controversial observation was discussed among Juan and the chauffeur. The chauffeur asked him (in a tone of logic-causality) if he was not going to enter the neighbouring plant and confront the responsible administration with his observation. Juan was clearly hesitant and with good reasons. First of all, any confrontation with this kind of observations justifies an immediate closure of the plant. A closure means loss of income not only for the owner(s) and partners of the plant, but also for the workers. Thus the stakes were, if not extremely high, at least considerable, and required confident authority on behalf of the person(s) that confront the responsible actors. In fact, discharge of wastewater into the river is considered a crime, which may lead to a prison sentence for the responsible individual(s). Another reason for the hesitation was the formal procedure of acting upon this observation. In theory, this kind of illegal activity is formally under the jurisdiction of the Ministry of Environment (MAE). Accordingly, the procedure is that ARCOM reports to the local representative of the Ministry of Environment who subsequently acts upon this report. The practical problem related to this is that the Ministry of Environment only has one person *in situ* in the whole area of Portovelo-Zaruma. In contrast, the local ARCOM office contains about 16 employees, of which 12 regularly do field inspections. Correspondingly, ARCOM has the mandate to take action on these occasions, but preferably in company with the Environmental Ministry. It should be emphasized, to Juan's defence, that ARCOM seldom, probably almost never, conduce inspections with only one official. On all other occasions they were at least two. Seemingly, this inspection was merely considered as a formality, and it was, if it had not been for the observation of the discharging pipeline.

After two minutes of hesitation, Juan decided to return to the office and commanded the chauffeur to take us there. Once there, he shared the observation and photographs with his colleagues and thus redistributed the responsibility to act or not to act. In this case, at least accounting for this particular day, ARCOM officials decided to temporarily ignore this observation. It was reported for sure, but no immediate actions were taken. Instead, Juan, along with another colleague and the curious observer (me) went to visit a mine in the outskirts of Portovelo.

Problem statement, aim and scope

Artisanal and small-scale gold mining (hereafter ASGM[i]) have received increased attention from scholars, activists and the public during the last decade. This attention correlates with increased gold prices that peaked in mid-2011, when a gram of gold was valued at almost 60 dollars[ii]. The general picture of ASGM, as described in its adherent literature, is that it involves mining carried out in remote areas with few resources, and that it is a dangerous activity causing severe environmental contamination, in particular through the release of mercury and sodium cyanide used in the process (Hentschel 2002, Sinding 2005). It is estimated that ASGM employs 16 million miners in the world (Seccatore et al 2014). This supports 100 million people (de Theije et al 2014:130). Although ASGM only produce between 380 and 450 tons of gold, which accounts for 10-15% of total annual gold production, the environmental impact is disproportionately large, particularly since it contaminates many river systems throughout the world (Miserendino et al 2013). A major obstacle to effective control and regulation is attributed to its informal character as a form of poverty alleviation representing a significant economic opportunity for people in impoverished regions.

Leaving a long and general history of mineral mining in Latin America apart, ASGM especially in the form of alluvial mining, has taken place long before both the arrival of white men and even before the rulings of the Incan empire in the 15th century. However, the oldest and largest ASGM district in Ecuador is located in its South-Western corner in an aptly named province, El Oro (English: The Gold). Here, in the mountains around the towns of Portovelo and Zaruma (hereafter P-Z), gold mining has been carried out for more than six centuries. This legacy of mining is carried by contemporary miners who, faced with increased state regulations and fluctuating gold prices, struggle to maintain their source of livelihood.

Accordingly, the opening story presented above captures an essence that I will elaborate on and explore in this thesis. This essence deals with the relationship between mining practice and mining regulation and illustrates a contemporary environmental conflict. Yet ultimately, as highlighted in the tradition of political ecology, this essence is also about how humans and the environment co-exist. My main research question throughout the process of working with this material has been:

How does current regulation impact and influence on artisanal and small-scale gold mining in Portovelo-Zaruma, El Oro, Ecuador?

Analytically it is possible to delineate the answer to this question in two. The first part lies in explaining and analysing what constitute *regulation* and *artisanal and small-scale mining* in their context, and their inherent links to external conditions. Thus, in this part I aim to answer: *How and why has ASGM developed into its current composition and organization? How does government regulation impose itself as a normative scheme amid other regulating structures?*

The second part is an analysis of the political and economic dynamics between the stakeholders that comprise the context. As the opening story briefly indicates, the relationship between government regulations and mining operations is contingent upon its enforcement, which again is contingent upon a number of contextual issues (e.g. personal characteristics of regulators and miners, power relations, situational conditions). Here I aim to answer: *What characterizes the relationship between miners and regulators? How do these actors legitimize their respective claims and actions?* By conceptualizing national mining legislation through the perspective of its enforcement, I argue that this becomes part of a process of *interlegality* (see below) reflecting divergent rationalities and epistemologies co-existing in continuous negotiations between actors' normative schemes.

In a historical perspective, official laws and legislations are themselves highly dynamic and only one bundle of several structures that regulate the mining sector. For instance, the history of gold mining in P-Z, illustrates how mining has been consolidated as an economic activity, and how current mining practices among artisanal miners are essentially the same as 400 years ago. Practice, knowledge, experience, place-making and an orientation towards gold through more than six centuries have created norms and institutions that have ¨naturalized¨ gold mining as part and parcel of the region. Through the classic social theories of Bourdieu, this long-standing orientation can be conceived as a habitus of informal mining, meaning embodied and internalized structures and dispositions that are being reproduced through everyday praxis (1977: 72). This helps conceiving, to some extent, how mining praxis is embedded in local identity.

Other examples of regulating structures are: the gold market, the co-existence of different scales of mining operations (entailing different and parallel economies), the political economy of the sector, and power relations that permeates all of this. I will discuss these dimensions throughout the thesis, yet for now, I mention them to accentuate the concept of *interlegality* (Simon Thomas 2009, de Theije et al 2014) in my analytical framework. De

Theije et al (2014:129-46) discuss this through what they call ¨engaging legal systems¨. Here, the writers conceptualize ASGM as an activity occurring in a situation of legal pluralism where state legislation is but one of several ¨laws¨ (customary/local laws, community regulations) organizing the sector. They make two important distinctions when treating the term legal pluralism (ibid.: 131-2). The first is the distinction between *de jure* and *de facto,* where the former is the legal pluralism reflected in official national law, while the latter is the social-normative legal pluralism that can be identified empirically in site. This leads to forms of interlegality (Simon Thomas 2009), which is, I would argue, a much more ¨down to earth¨, and realistic conceptualization of any given ASGM site. Second, they make a distinction between illegal and illicit practices where the former refers to *de jure* illegality at odds with national law, while the latter refers to practices that are socially unacceptable, *de facto.* Compared to a narrow and dichotomizing perspective where national law is the dominant point of reference (in media, public statements and ¨apolitical¨ research), this perspective correlates much more with the informal character of ASGM.

Taken together, the above-mentioned roughly indicates the locus of this thesis. My working research question provided for a fruitful approach into the discrepancy between legislation and its implementation, which in term resonated strongly with the tradition of political ecology. And although political ecology is hard to delimit and define, this thesis will give credence to a critical approach in a case of environmental conflict that ¨highlight[s] the importance of situated perspectives¨ (Le Billion 2015: 604). There are two main empirical reasons to apply this view. The first stems from the observation that the mining community of P-Z finds itself entangled in a process of environmental degradation and social marginalization, which is a major theme within the literature of political ecology (cf. Robbins 2012: 157-75; Benjaminsen 2015). The second reason comes from the observation that the existing literature on the context is dominated by natural sciences on toxicity and technical features of the local mining. I critically examine this research and illustrate its apolitical dimension which, despite its scientific thoroughness and diligence, contains a problematic dimension due to its positivist assumptions. Moreover, in the contexts of ASGM in PZ, it is indeed politically authoritative and supportive of Hardin´s thesis of ¨The Tragedy of the Commons¨ (1968). Accordingly, there is a need to engage critically with this scientific discourse and conceive it as a constituent of the local politics of mining.

Regarding the political situation, the absence of critical voices that address more than immediate complaints (miners moaning about ¨too strict regulations¨ or, from the regulatory side; ¨miners don´t comply¨) is striking. There are no NGOs working in the region, nor any

environmental justice movement or versions of this. There are occasional critics, especially among agriculturists, teachers and local historians, but no organized opposition to mining. Simply put: the mining community in P-Z *and* the regulations of the sector is dominantly pro-mining. This lack of resistance is curious given that P-Z is, at least historically, the most renowned case of mining in Ecuador. Among other things, this indicates that the case of P-Z does not ¨fit¨ the campaigns of environmental activists. Analytically, however, this situation makes up for a very different dynamic compared to contexts of large-scale mining where (indigenous) resistance and state expropriation of land are common features. In P-Z, the only people who confront miners with their mining practice are the governmental institutions of ARCOM (Agency of Control and Regulation of Mining), MAE (Ministry of Environment), INIGEMM (Institute of Metallurgical Mining Geological Research) and the Ministry of Work. This confrontation however, is exclusively instrumental, meaning that it only addresses the mining practices at odds with national legislation (essentially the use of mercury, tailings treatment, certifications/licences and security measures) and largely ignores a deeper exploration into the *whys* that make up for this practice. Instead, the explanations applied are versions of Hardin´s tragedy – ¨artisanal miners pollute because they can´t invest in better equipment, and larger companies pollute because it's cheaper than complying with environmental legislation¨. What they ignore, quite out loud as I will argue, are two major observations:

1) Marginalization of artisanal and small-scale miners. As I will show in the historical passage, this reflects a continuity of marginalizing politics towards artisanal miners working at the margin of larger mining operation. Nevertheless, and despite the efforts to recognize the particularity of ASGM in Ecuadorian mining legislation, this process of marginalization continues, largely through a governmental preference for larger mining operations, which are, presumably, easier to control and regulate. Consequently, this process of marginalization leads to local resentment towards the State (in its multiple representations), a problematic climate for negotiations, which taken together, create an incentive for engagement in illegal mining practice.
2) Internal power relations, hierarchies of exploitation, corruption, and a vast illegal practice. This is essentially the corollary of the political-economic situation that conditions the sector today, as well as historically. Some of these features are responses of adaptive character, while others also include opportunistic qualities.

Without taking these dimensions into account, two important outcomes emerge: 1) the environmental and social problems are maintained as technical issues across a legal/illegal axe (cf. Scott 2010: 25), and 2) someone is making a lot of money while others barely make a living. Thus, a key argument which I will sustain throughout the thesis is that the governmental bias for the largest mining companies, which can be discerned historically as well as through the current government's aim to drastically expand large-scale mineral mining, has several and complex socio-political effects which I will illustrate throughout the thesis.

My analytical perspective emphasizes the ethnographic story with a focus on politics and power. Nonetheless, it will be necessary to examine how mining in P-Z has evolved to become what it is today. For instance, local history illustrates how the colonial imagination involved a very different vision of the world compared to the one prevailing in P-Z today. And although world-views and epistemologies appear as abstract concepts, they are highly normative and their manifestations and articulations are very real, material and often violent – suffice to consider the colonial exploitation of indigenous manpower. Likewise, on a horizontal axe, colliding epistemologies (e.g. external scientific episteme vs. local practical knowledge) challenge assumptions of stability or objectivity regarding the morality of mining and reveal it as a process rather than something static. I argue that the complexity arising from this is important in order to understand the rationale of different stakeholders and their respective points of dispute.

Thus, in an attempt to condense this analytical framework, I reiterate that the locus of investigation here is the dynamics between mining practice and mining regulations. In contrast to other scholars examining processes of decision-making and democratic participation related to resource governance, my interest is on the governmental regulation and the tension that is created through its enforcement. As already mentioned, I approach this by acknowledging the existence of legal pluralism in which control and regulation of mining practice is a process of negotiations, confronted with local traditions, norms and values. Furthermore, this framework is embedded within the characteristics of political ecology and what Robbins suggests as ¨*a community of practice* united around a *certain kind of text*¨ (2012: 20, italics in original). These ¨texts¨, he continues:

> …can be understood as to address the condition and change of social/environmental systems, with explicit consideration of relations of power. Political ecology, moreover, explores these social and environmental

changes with an understanding that there are better, less coercive, less exploitative, and more sustainable ways of doing things. (ibid.)

The quote emphasizes what Robbins terms ¨the hatchet and the seed¨ (98-100), where the hatchet is political ecology criticizing dominant narratives or dominant approaches to environmental conflicts, while the seed is political ecology's work to envision and advocate for alternative and more sustainable solutions. In this perspective, the thesis at hand is foremost a hatchet into the existing conditions and the existing research in P-Z. And the seed? First of all, there is no point trying to plant that seed without doing a proper job with the hatchet. Second, this thesis is foremost an exploration into the current state of affairs aiming to inform the existing descriptions and conceptualizations on dimensions that have barely been touched upon. Hence, I aim to confront and expand current research on ASGM both in P-Z and generally, towards constructing a theory of interlegality.

Fundamentally, the critical attitude applied here resonates with the Marxist roots of political ecology and an insistence of capitalism and neo-liberalism as detrimental to human existence. Well aware that this may appear like a cliché to the reader, I will nonetheless argue that there are good reasons to maintain this attitude. Not only is it a sound critique towards an economic system that continues to produce increased human inequalities (cf. Piketty 2014) at the cost of the environment (cf. Klein 2015), but also because the dominance of capitalism hides other ways to envision the world. In P-Z, this articulates in several ways, but especially as a consequence of a prolonged relation to global markets resulting in a deep (historical) commodification of nature. The outcome, as already mentioned, is a dominant pro-mining culture which is furthermore consolidated through governmental incentives to scale-up production. In other words, neo-liberalism can be seen as a long continuity, picking up momentum with Spanish colonization and a mercantilist economic regime, passing on to the first independent, republican governments attempting to exploit the mines, before reaching a decisive consolidation with the early industrialization by foreign companies in late 19th century. Despite several progressive efforts by alternating Ecuadorian governments (including the current administration), this orientation towards mining in P-Z has been sustained and has accordingly shaped the meaning of mining in the neo-liberal doctrine. I will return to this and nuance on its socio-political effects.

Before I continue to elaborate on this analytical scope in relation to theory, including some important limitations, I wish to briefly introduce the reader to the current development of mineral mining in Ecuador, and the place (P-Z) from which the empirical observations

stems. As will be clear, the development of large-scale mining currently has a strong momentum in Ecuador and is basically a whole different story compared with ASGM in P-Z. Still, while mining legislation is accommodated to fit the development of large mining projects, it is of course, very influential to the politics of mining in P-Z as well. Hence, I suggest that we must conceptualize ASGM (in Ecuador) in relation to the bourgeoning development of large-scale mining projects by foreign companies and capital.

Mineral Mining in Ecuador

On the annual PDAC[iii] 2015 convention held in Toronto in the beginning of March, the Ecuadorian Minister and Coordinator of strategic sectors, Rafael Poveda, declared that Ecuador was aiming to attract 5 000 million dollars of foreign investments to its mining sector in the next five years. His justification was that this would lead to ¨the income of 2 000 million dollars in mineral exportations and generate 10 000 jobs in the country¨[iv]. Poveda's meetings during the convention apparently attracted great interest from international mining companies. Although he was unwilling to reveal details from these meetings, he said that he was optimistic upon his return to Ecuador.

At this year's PDAC convention (March 2016), Rafael Poveda was substituted by Javier Cordoba, the Minister of the Ecuador's newly formed Ministry of Mining. And while Ecuador attracted interest the previous year, this time the interest was so great that Cordoba apparently spent his days celebrating in Canada[v]. Yet, the Minister was sober enough to understate that the profits from this development must, above all, benefit the local communities in the areas of exploitation. His general message on the other hand, was an open invitation to international mining corporations. And in huge contrast to its neighbours in Peru, Colombia, Chile and Bolivia, Ecuador is just about to start its career as a mineral mining producer. Until now, Ecuador has foremost relied on oil extraction from the Amazon since late 1960s (see Larrea Maldonado 2006: 91-104 on the initial steps of this development), while large-scale mineral mining has never proliferated. Today however, there are ambitious plans in motion, epitomized by large-scale projects in the Southern-Amazonian region, more concretely in the shape of *El Mirador* (open-pit copper mine) and *Fruta del Norte* (underground gold mine) in the province of Zamora Chinchipe[vi]. The development of these projects, especially the former, have created extensive indigenous resistance and substantially questioned the foundations of democratic participation and deliberate democracies (see for instance: Falleti & Riofrancos 2014).

Several authors have critically commented upon the neo-liberal character inherent to this development (Sacher & Acosta 2012; Bustamante & Lara 2010; see also Machado et al 2012). Unsurprisingly, the critic highlights the contradictions between this recent development and the social-environmentalist paradigm which served as the political foundation for the Correa administration in its beginning, that is, when President Correa opposed the logics of ¨the long and sad neo-liberal night¨ at the General Assembly of the United Nations in 2007[vii]. The emergent problem, it seems, has been to finance the rhetorical attacks on neo-liberalism. And increasingly so after the recent drop in oil prices, which in praxis has resulted in more Chinese loans to sustain an Ecuadorian economy with a heavy reliance on oil revenues. Henceforth, mineral mining, or mega-mining, as the above-mentioned critical authors phrase it, is increasingly promoted by the current Ecuadorian government. I will touch upon this in the passing, but not extensively as this is another focus for study. The relevance here is that the expansive development of large scale mining in Ecuador comprises the contextual background for the regulation of mining, which also includes ASGM in P-Z.

The Place

Zaruma and Portovelo are two neighbouring towns in the South-Western corner of Ecuador. They are located in the interior of the province named El Oro. The name indicates the historical position of P-Z as the first gold mining centre in Ecuador. Today however, the province is more renowned for its banana production in the lowlands. Machala, the province capital located at the coast, is often referred to as the banana capital of the world, with large fields of banana plants stretching out and surrounding the city. The banana *boom* commenced shortly after the end of the Second World War (Larrea Maldonado 2006:62-66). Despite ups and downs in correlation with market fluctuations, but also pest and plagues, it established as the key economic activity of the province and a cornerstone of Ecuadorian exports. A similar yet more recent phenomenon occurred with the *boom* in shrimp farming along the southern coasts of Ecuador. This aquaculture production commenced during the 1970s, but accelerated during the 80s and 90s, before it was struck with a serious plague around the turn of the millennium (Romero Salgado 2014). Still, it maintains itself, along with banana production, as the most important industries of El Oro.

Figure 1 (retrieved from Miserendino et al 2013): shows P-Z in its geographical context. It shows that P-Z is situated amid the tributary rivers (Calera and Amarillo) of the Puyango River that eventually flows into Peru.

Both banana and shrimp farming take place in the lowlands and mangrove coasts. If we move east towards the Andes massif, a contrasting, hilly landscape emerges. Cloud forests - abundantly green all year around - cover this scenery with scattered towns, small-scale coffee and cacao fields as well as occasional pastures for cattle. Rivers run through this landscape, growing in size during the rainy season from December to May, and still used for recreation although some people claim that the water is not as crystalline as in the past. This observation is affirmed when one descends from the town of Piñas towards Portovelo and Zaruma. Here, one encounters the Calera River running through the most contaminated industrial site in El Oro province. This is home to the processing plants (small factories) that process the minerals from both local and faraway mountains. And why are the plants placed along the river? Essentially to make use of the water in the process and to get rid of the toxic tailings by dumping it in the river. Once arriving in this narrow valley called El Pache, the smell of cyanide sodium is hard to ignore, although difficult to distinguish unless one is familiar with this chemical. At any rate, there is a strong chemical smell, and according to some of the locals I met during fieldwork, it is the smell of coming home.

There is a disjunction in El Pache: arriving in car from Machala about an hour and a half away, one can either go straightforward and ascend to Zaruma or turn right towards Portovelo. Zaruma is located at 1200 meters above sea level with a beautiful view towards the Loja province in the south, while Portovelo is situated at 600 meters above sea level in a valley, a five minutes' drive from the infamous El Pache. Although it only takes about ten minutes or so to ascend from Portovelo to Zaruma by car, the difference in altitude and

location makes up for two contrasting climates, where the latter is noticeably fresher than the former. This geographical hierarchy resonates with several contrasts between the two towns: Zaruma has a picturesque colonial architecture that is only awaiting UNESCO's approval to be embedded in the World Cultural Heritage list, while Portovelo undoubtedly has a much rougher, worn-out, industrial working class atmosphere to it.

According to the latest census[viii] in Ecuador (2010), the canton of Portovelo has 12200 inhabitants, while the canton of Zaruma has 24097 inhabitants. These population numbers have been stabile the last thirty years. Most people live in the urban centres of their respective cantons, but there are also numerous small towns and settlements, in which people live off the land and the minerals underneath. In particular, the hillsides between and underneath Portovelo and Zaruma are typically called ¨a Swiss cheese¨, by local people. The local population is essentially mestizos with long roots to the place. There has been both migration and immigration, much in correlation with the level of activity in the mining sector. With notable exceptions consisting in workers coming from Peru and other parts of Ecuador, the population in P-Z is largely composed of families coming from the same or adjacent districts.

To an outsider's eye, Zaruma in particular appears as a very nice place. The same applies to its surroundings and neighbouring small towns, for instance following the road to Paccha (not to be confused with El Pache). The landscape, although partly lacking the characteristic tree cover of cloud forests not too far away, gives a pleasant and green impression. Likewise, people are welcoming and famously friendly. The general atmosphere is nice and calm, accompanied by good, local coffee and delicious traditional food. As mentioned, Portovelo is a bit rougher, but without any apparent misery or extreme poverty. There are houses that appear quite fragile and poor, but nothing that contrasts sharply to other small towns throughout the Republic of Ecuador. The most visible example of poverty combined with mining activity are the new settlements (*invasiones*) in the lower parts of Portovelo, where shacks and rudimentary dwellings are placed in immediate proximity to processing plants and their respective tailings ponds.

Yet, in general, and I wish to make this point already here, the region that includes the cantons of Portovelo, Zaruma, Atahualpa, and Piñas, which taken together is referred to as ¨the highlands¨ (*la parte alta*), is nice and hospitable. The climate is warm (at times a bit too warm in the case of Portovelo), land is still relatively good for agriculture, food is cheap and people seem to manage quite well. Indeed, there are scars in the landscape and what I will later refer to as sacrifice zones (cf. Scott 2010), but far from the scales and dimensions as reported from ASGM districts like La Rinconada in Peru (Wade 2013) or Antioquia in

Colombia (Cordy et al 2011). Similar remarks may be applied to the history of mining in P-Z. Indeed, the colonial exploitation of indigenous manpower was both cruel and inhuman, and only to be followed by a harsh industrial mining regime during the hegemony of the South American Development Company in the first half of the 20th century. Yet, compared to the prolonged abuse and structural, human exploitation described in classics like June Nash' (1993) *We Eat the Mines and the Mines Eat Us*, or more recently, the environmental disasters and tremendous impact on indigenous people caused by copper mining in Papua New Guinea (Kirsch 2014), P-Z is simply not *that* bad. Of course, this depends on the point of comparison, and there may be valid objections here, but the ¨degree of degradation¨ in P-Z is for instance moderate compared to the other two major ASGM districts in Ecuador. The latter, which are the mining districts of Ponze Enriquez/Bella Rica (Azuay province) and Nambija (Zamora province), are much more representative for the classic contexts of accelerated (and more recent) exploitation conducted without any planning or regulation. Subsequently, these sites, especially Ponze Enriquez, have been characterized by a poor environmental state where social problems, including crime and high rates of HIV is commonly known.

As mentioned, there have been waves of migration from this region, particularly towards Spain, Italy and the US after the last financial crisis in Ecuador in 1999. Today however, many migrants have returned as things got tough in Europe/US and the economy improved back home. Still, a significant demographic movement during the last decades has been towards the urban centres of Machala, Guayaquil, Cuenca and Loja. Young people who can afford it go to study in these cities, while others go to find work. Especially Machala, which is the closest large city (approx. 250 000 inhabitants), has largely been populated by people from these highlands. Hence ¨everyone¨ has relatives down in the lowlands or in one of the mentioned cities. These relatives typically maintain much of their local identity and dialect of ¨la parte alta¨ while living somewhere else. Moreover, they frequently return to P-Z during vacations and family gatherings and, in accordance with local customs, always give a helping hand to locals who wish to try their luck in these urban centres. It is relevant to highlight this demographic dynamic because it shows that the local population, which is currently and historically highly dependent on gold mining, has feasible alternative livelihoods not too far away. Here I have mentioned the banana and shrimp industries, but this should be conceptualized on top of a general trend of rural populations gravitating towards urban areas in Ecuador, as in the world at large. Local people in P-Z who do not engage in mining, go to the cities either for studies or work, and uncommonly return to live in their place of origin, except for holidays and retirement.

The ASGM sector of P-Z directly employs between 6000 (Miserendino et al 2013: 713) and 10 000 miners (Veiga et al 2014: 541) depending on the estimates used. Although there is a modest agricultural sector (primarily coffee and cattle) in the region, mining indirectly sustains the whole local economy with an annual production of nine tons of gold[ix] (ibid.) and roughly three times this in silver. As I will emphasize in chapter two, the complexity in terms of composition and organization of this mining district is vast. Here it suffices to say that there are mining operations of considerable size (at least within an ASGM context) where the largest company, ELIPE Ltd., has a plant capacity to process 2400 tons of ore a day. On the other end, there are numerous artisanal miners engaging in small operations ranging from occasional alluvial mining in local rivers and streams to simple and shallow tunnels into the mountains. These latter operations are conducted with minor investments on an individual or small-group basis which typically entail a prolonged period of mining, and an accumulation of mineral ore which is finally carried to a processing plant where the gold is extracted. In between the largest and smallest scales of mining, there is a whole array of different operations taking place. Additionally, the processing plants in P-Z also process ore from other parts of the country (particularly Ponze Enriquez and Nambija) and Northern Peru.

With this in mind we can return to some theoretical considerations that will inform the analysis and interpretation at hand.

Theorizing artisanal and small-scale gold mining

In her book about uranium mining in Navajo lands in USA, Voyles (2015) coins the term *wastelanding.* Wastlanding, she argues, is a colonial project in which places, spaces and bodies are rendered *pollutable.* It is colonial because it conquers the indigenous meanings attributed to the landscapes, re-shaping it with the use of capitalist narratives, into a place that is worth sacrificing for the exploitation of resources, i.e. ¨development¨. This is a well-known phenomenon in political ecology literature in cases where a place/space is re-constructed by colonial powers, neo-liberal capital interests, conservationists or ¨developers¨ of some kind (Perrault et al 2015). The story is essentially that powerful actors create a new dominant, political narrative of the place – often as some kind of empty, useless or ¨dead¨ space or on the other side; an abundantly rich wilderness practically devoid of people. This is done in order to legitimize an action (either exploitation or conservation) that corresponds to this narrative. Voyles' approach to this is marked by sympathy towards the environmental justice movement that refuses to accept that the problem of contamination is merely a question of the

presence and distribution of toxic elements. Rather, what she and this movement is more deeply concerned about (undoubtedly shared among many political ecologists) are the structures of power and the institutions that produce environmental *injustice*. To Voyles the phenomenon of environmental injustice is closely affiliated with racism, colonialism and capitalism. Accordingly, she says:

> Thus, the distribution of toxins is merely the *signifier* of the foundational, enabling modalities of modernity: ¨capitalism, colonialism, and white supremacy. To ask for ¨just¨ distribution of industrial pollution, waste sites, mines, unsustainable and toxic labor, and so on, is not to ask for redistribution but rather to ask for modernity to throw up its hands and dismantle itself. (Voyles 2015:25)

In part, the quote echoes Marx's famously saying: ¨…all progress in capitalist agriculture is a progress in the art, not only of robbing the worker, but of robbing the soil¨ (1990: 638, cited in Robbins 2012:58). But, what if measures *are* taken to improve both environmental and health conditions in a given context? What if the State struggles to avoid capitalist schemes of exploitation? What if the State has a system that effectively distributes wealth from its natural resources to its marginalized populations? I am not saying that the current government of Ecuador does all this, but there have been substantial political changes with the Correa administration, changes that hampers a straightforward Marxist analysis of extractive industries in Ecuador.

Nevertheless, there are traits that might belong to a Marxist (inspired) critique of the government's double discourse of environmentalism and ¨responsible extractivism¨. This has sparked a wide discussion within the field of political ecology in Latin America, which I will briefly review below. While this is a side-track to the theories that guide my analysis, is is a side-track that I will return to discuss, especially towards the end of the thesis. My concern here is two-folded:

1) Academics and activists, often with first hand experiences of the problem they analyse and loaded with a critical mind set towards social and environmental marginalization/degradation, sometimes fail to acknowledge the structural efforts towards improving the conditions (see chapter 3) and the internal power dynamics that may obliterate progressive improvements.

2) Although these academics may be stunningly accurate and point to real inherent problems that do relate back to a deep, global injustice, the eagerness to blame the ever existing actors (most often governments and multinational corporations), make them blind to

the sheer difficulty of regulating an extractive industry that produces complex and inconsistent social and environmental effects.

The problem for the environmental movement here, and partly also for political ecologists, is that they largely rely on producing a convincing and coherent narrative where protagonists, antagonists and victims are clearly defined. Thus they risk replicating, albeit in a much more elaborate way, the narrative creation (by governments and capitalists) they criticize. Evidently, protagonists and victims may be the same, but what if, to use the case of Voyles, Navajos would organize to establish their own mining companies to exploit uranium using Afro-Americans as work force? Would it suffice to say that they were forced into this situation by their historical marginalization, which they simply reproduced by the act of learning? My short answer to this is no. And my short answer to some of the things produced in the intersection of environmentalism and political ecology, is that yes, it is legitimate to remark that the world is skewed and deeply unjust, and although I agree that it is important to maintain this critique and fight for change, this should not hide a nuanced view on stories of social marginalization and environmental degradation. Clearly, this is an act of balance, and while the major problem for political ecologists may be to influence decision-making at all, my choice here is to present a complex story with a narrative plot that do not merely render the local population as innocent victims. I do so at the risk of obscuring a coherent and clear argument, but I argue that this corresponds to my ethnographic account and I intend to let this guide me throughout the thesis[x] (for a similar argument see: Johansen et al 2015). With this clarification in mind, I return to theories that shape my analytical scope.

As Voyles points out, we need to complement the perspective on the *signifier* (i.e. pollution) with a critical view on the power structures that produce the conditions that makes pollution take place exactly where it can be observed. This is fundamental, and without the latter part, we would merely be descriptive in our accounts, failing to address the reasons behind. Not too far away from the scenes of Voyles' ¨Wastelanding¨ book, an innovative exploitation of natural resources is taking place. Mountain Top Removal (MTR) in the Appalachian coalfields (West Virgina) is the concern of Rebecca Scott in her book from 2010. The book has several common grounds with Voyles' book (besides the geography), and seeks to understand extractive practice through discourses such as race, gender, sexuality and region (Scott 2010: 220). Both Voyles and Scott share a sympathy with the environmental justice movement and accordingly use this as a moral anchor when they explore the meanings of mining in their respective contexts. Likewise, both address the formation of ¨sacrifice zones¨ in USA and its national discourse of progress and development. If we think of sacrifice

zones in a comparative perspective however, it is clear that this is a global phenomenon (with abundant examples from virtually all nation-states). This is applicable to P-Z as well, especially to waste and tailings deposits, as I will return to comment on in chapter two. Meanwhile, there are several insights from Scott´s book about coal that are useful to the analysis of gold mining in P-Z.

First of all, there are commonalities between her discussion of MTR and the discussions of ASGM. Although they imply qualitatively different forms of extractive regimes and the former is more of a technique compared to all the fuzziness of the latter, there are important similarities. For instance, Scott conceives MTR as a practice that involves an ¨excess of meaning¨ (2010:20) when she remarks that: ¨The practice is enmeshed in contradictory national discourses of hierarchical differences, progress and citizenship¨ (ibid.). Accordingly, to remove the top of a mountain, much more than its technical feature is an act that epitomizes the capitalist discourse of progress and development at the cost of virtually anything. It requires ¨…the colonial imagination of the land as empty, useless and waiting to be improved¨ (210), which Scott leaning on Lefebvre (1991) conceives as ¨the abstract space…intrinsic to capitalism¨. Her point is that this practice is based upon a naturalization of economic development as a benevolent and inevitable process. Not only is this part of the American dream, but essentially something that is made possible by a traditional white middle class orientation where ¨nature¨ is detached from modern life to represent ¨wilderness¨ somewhere else. In this case local place-making has rendered ¨nature¨ into a coalfield and thus, ¨nature¨ to be replaced with the economic relationship to the market (Scott 2010:211-2).

Despite its differences, much of what Scott describes here is applicable to P-Z. The commodification of nature is as true for the Appalachian coalfields as it is for the gold mines of P-Z. The ¨colonial imagination¨ imposed a legacy that has prevailed ever since. Not only did the Spaniards reduce nature to a question of market potential, but they also engaged in an inhuman exploitation of indigenous manpower[xi]. In terms of explicit racism this legacy has been modified, but the past is not very far away, and can be found in new forms like the frequent use of immigrant workers from Peru or poor regions of Ecuador. Another, yet slightly different example is the issue of child labor only recently subjected to large governmental campaigns. Many miners I met had started their mining careers at the age of 11-12 years and reflecting Scott's remarks about a dominating capitalist rationality, these miners, instead of lamenting about a lost childhood (or something like that), brawled about how much money they made already as youngsters. However, the legacy and formation of mining

identities and the answer to the question of why to become a miner is both complex and relevant for how regulations are negotiated. I will return to this in chapter three.

Chapter three is essentially about the particularities involved in the enforcement of national mining legislation and the reactions it creates. Recalling how Voyles observed how places, spaces and bodies were rendered *pollutable* by dominating narratives, Tania Murray Li (2007), in a similar vein, discusses how places/spaces are rendered *technical*. Li explores how governmental programs are constructed and applied as interventions to improve the ¨efficiency¨ of agriculture and livelihoods in Central Sulawesi highlands (123-55). Likewise, the interventions in the context of Papua New Guinea also relied heavily on the creation of a dominating narrative of the constituents of the place and space. Furthermore, a central theme for Murray Li is that the act of ¨rendering technical¨ is intimately linked with ¨problematization, that is, identifying deficiencies that need to be rectified¨ (7). These acts, she argues, are characteristically non-political (or apolitical) and based on ¨experts¨ evaluations (ibid.)[xii]. In the context of P-Z, this resembles very much the dominating discourse created by ¨apolitical¨ natural science on the toxicity of mining, which again constitute the major fundament for governmental decision-making. I will return to address these matters in both chapter two and four.

Murray Li´s book is explicitly a treatise in Michel Foucault's theories of power. More precisely, it builds upon his concept of *governmentality*, in which ¨government is the attempt to shape human conduct by calculated means¨ (Murray Li 2007:5). Rather than consisting in a one-to-one convincement of individuals, this form of power operates at a distance by shaping people's desires and aspirations. Above, I already mentioned Pierre Bourdieu´s theories of habitus (1977) and while both Foucault and Bourdieu include an understanding of power to operate unconsciously among the actors, the difference between them in this regard is that Foucault refers to a kind of power that has a clear and radical element of intentionality to it (someone is consciously manipulating someone). Bourdieu on the other hand, at least through his theories of habitus and doxa, draws an image of power that is devoid of intentionality, not as to exclude its possibility, but more generally to illustrate that power works to naturalize political conditions and bodily practices. Hence, I do not conceive these perspectives as opposing each other, but rather as complementary and as relevant to understand how miners, in varying degrees, are carriers of a long legacy of mining while simultaneously subjected to governmentality, or to use Murray Li's words: a (governmental) will to improve. Meanwhile, miners do not simply subjugate to this governmentality, but quite on the contrary, respond to

it in multiple ways. I situate and conceive the dynamics of regulation and contestation as the process of interlegality, outlined in my analytical framework above.

The examination of power relations is unquestionably relevant to this perspective, and alongside Murray Li's interpretation of Foucault, I turn to Stephen Lukes' (2005) theories on power. I return to address power most explicitly in chapter five. For now, it is worth noticing how Lukes categorizes power into three dimensions and how he conceives power in the context of interests:

> In general, talk of interests provides a licence for the making of normative judgments of a moral and political character. So it is not surprising that different conceptions of what interests *are* are associated with different moral and political positions (…) Extremely crudely; liberal (one-dimensional view of power), reformist (two-dimensional view) and radicals (three-dimensional view). The latter: ¨maintains that people´s wants may themselves be a product of a system which works against their interests, and, in such cases, relates the latter to what they would want and prefer, were they able to make a choice. (2005:37-8)

In my view, although the relationships are notoriously empirical and complex, Lukes' last sentence here, which is a characterization of his three-dimensional view on power, is fairly descriptive of the situation in P-Z. Many actors (external and internal) are interested in the gold that can be extracted from the mountains in P-Z. Bluntly put, no one opposes it, but everyone wants (the largest share of) it. And what creates this want? Essentially, it is the capitalist dogma of material growth as a benevolent thing, but also a fundamental human need for subsistence. The latter is a valid argument while the former is a product of an idea at odds with both human and environmental well-being. The problem is that they are mixed together in the orientation towards gold. The need for subsistence becomes an incentive that develops progressively towards an enhanced want for gold that can be converted into material wealth. Along with the powerful narrative of capitalism, the legacy and insistence on mining, capitalist accumulation of wealth becomes the aspiration for miners that deliberately expose themselves to numerous risks and hazards by working in the mines and processing plants.

This is roughly the logic behind the mining, but as I will emphasize in chapter two, the degree of dependence and the degree of capitalist motivation varies widely among miners. In the context of power and power relations I have identified two major structures that I will scrutinize. The first is the process of marginalization towards artisanal miners, which involves an asymmetrical relation of power/authority between these miners and the government in alliance with the largest mining companies. The second relates to the notion of responsibility[xiii] in the sense that while we can admit that the environmental and social consequences of mining in P-Z are effects of long, complex and intricate relations and

practices, some actors are clearly more to blame than others. Not only are they to blame according to their acts or decisions, but equally through their inactivity or non-decisions (cf. Lukes 2005:40). Hence, I will analyse the relations, activity or non-activity of central actors such as ARCOM, INIGEMM, APROPLASMIN (Association of Processing Plant Owners) and ELIPE Ltd. Yet, this being said, a key point is that the task of enforcing national legislation on this environmental conflict is profoundly delicate and tricky. While I am critical to several aspects of the government's ¨will to improve¨ the conditions of mining, I therefore acknowledge and illustrate the difficulties of law enforcement throughout the thesis.

In general, as the reader may have discerned by now, there is an anthropological flavour to this thesis (including my version of political ecology), especially regarding the social theory I make use of. I do engage with the natural sciences involved in the literature on ASGM, but instead of attempting to follow this at length, I let it inform the thesis on processes and consequences of mining. At the same time, I critically address its effects. In the tradition of political ecology, this double bind reflects what Robbins terms as the uncomfortable juxtaposition between a realist (positivist) and a social constructivist approach in relation to claims of nature (Robbins 2012:97). And, indeed this may be a tricky stance, especially in the light of explorations into ontological pluralism where there seems to be solid evidence that humans conceive reality qualitatively different (cf. Law 2011). Yet, I think it is possible to say something meaningful about this case of resource governance/environmental degradation anyway. In fact, I consider this ambivalence between positivism and social constructivism as an ingenuity of political ecology, one that enables it to speak across scholarly boundaries instead of an academic tendency towards merely creating internal (disciplinary) discussions, as may be the case in other disciplines. Yet, this has some consequences that I will return to address in chapter four.

Limitations

As touched upon in relation to the development of large-scale mining in Ecuador, critical assessments have been highlighted in a prolonged discussion about resource extractivism within political ecology in Latin America. In particular, the discussion has revolved around political contradictions, inconsistencies and ambiguities related to development after the so-called Left Turn (e.g. Bebbington et al 2008; Escobar 2010; Lang & Mokrani 2011; Escribano 2013; Bavinck et al 2014; Pellegrini et al 2014; Ulloa 2015). Accordingly, questions regarding multiple ontologies, i.e. different ways to conceive of ¨reality¨ and relate to the

environment, are at the heart of current political ecology approaches in Latin America. Much of this stems from acknowledging that ¨other worlds are (already) possible¨ (Escobar 2005), that is, based on empirical evidence from, but not necessarily restricted to, indigenous and Afro-American communities within Latin America. In essence, this discussion works towards de-naturalizing the hegemonic ontology of capitalism that is profoundly contingent on the idea of humans as separated from, and masters of, nature. One of my limitations in this thesis however, is not to engage too much with this discussion. There are two main reasons for this. First of all, and bluntly put: all my informants are mestizos representing a mainstream Ecuadorian ontology much in line with legislative authorities. Although it would be interesting to explore this case as an environmental conflict in a context of less radical ontological differences (compared to contexts/conflicts involving indigenous, Afro-American communities and/or environmental movements) between the actors, at this stage I simply do not have the empirical data required to do so. Second, by venturing into this discussion I would open up for a long debate on the human/nature dichotomy that, despite its relevancy, would alter my analytical scope and redirect it towards legislation and its links to government ideology. Hence, while avoiding to ¨throw the baby out with the bath school¨ (Callon and Latour 1992), I acknowledge that an exploration into ontological claims is of political importance (cf. Law 2011), yet limit myself to an exploration of epistemological claims in chapter four and how this relates to power relations in chapter five[xiv].

Another major limitation to this analysis relates to the subject of gender and gender relations. I agree with scholars like Scott (2010) and Ferguson (1999) when they suggest that masculinity play a pivotal role in extractive industries. Hence, I realize that this account is also a gendered story where the male miner and the male law enforcer play the roles as protagonists. Accordingly, the reader should assume that this is an important complementary dimension to my analysis although I do not elaborate extensively on this here. My excuse for not taking this dimension into account, rests on a need to limit my analytics.

A related limitation to the following analysis is that I do not elaborate extensively on the issue of class struggle in P-Z, despite my observation of hierarchies of labor exploitation. Rather, I illustrate how the community unites to oppose regulation and external interference, *despite* the asymmetrical power relations, and how governmental authorities consolidate the internal hierarchy. I assume that there is more complexity to this, i.e. that artisanal miners may occasionally be in conflict with more powerful miners and owners of processing plants, but I do not have sufficient empirical data to follow this thoroughly.

A final limitation concerns my choice of theory to support the analysis. On this point, the list is potentially very long, but the most relevant, at least in my own eyes, is that I avoid any thorough engagement with institutional economic theory. Indeed, there are insights from scholars such as Elinor Ostrom (e.g. 1990), Joan Martinez-Alier (e.g. 2013), and Arild Vatn (e.g. 2005) with a potential to inform this thesis, but it would, presumably, altered the direction of my study away from its ethnographic scope.

Methods

How did I obtain my information? How much data have I in fact been able to extract? And is it enough? I asked myself these questions as my first round of fieldwork was coming to an end. A bit worried and bewildered perhaps, I had my last lunch at a local restaurant in Zaruma. I sat by the window at my regular table and picked up my notebook to scribble down some thoughts and ideas. ¨How can I possibly measure and seize what I have learned during the last three months?¨, I asked myself while looking through the window. Then I got an idea or a thought, or a mix of both: the view I was contemplating was exactly the same as the view I curiously approached having lunch at the exact same restaurant at the exact same table, three months earlier. Back then I had asked the owner of the restaurant a number of questions:

- What is that big installation with the large pool down there at that hilltop?
- That´s ELIPE's processing plant with its tailings pond, he answered.
- And that river over there?
- That is the Calera River that unites with the Amarillo River further down. They eventually form the Puyango River that runs into Peru, he said.
- And what about those houses down there in the valley?
- That is Portovelo, he answered before serving me the soup of the day.

I was so eager back then that I struggled to balance my curiosity with a minimal amount of politeness. Yet I soon got to know the restaurant owner and his wife and we had both short and long conversations about the view and the place throughout my fieldwork.

The point is that while I was waiting for my last lunch in Zaruma before heading back to Norway, I was looking at the panorama from this restaurant window with new eyes. I looked at Portovelo down in the valley and a number of people and places immediately emerged to my consciousness. I looked at the Calera River and thought about the illegal dumping of tailings in the river, but also about friendly conversations with the workers of the processing plants. I saw ELIPE's big installation called ¨Golden Valley¨, and lamented that I

had not been able to visit it. In the direction of Piñas, I saw the big open scar in the mountain and knew very well that it was a quarry that does not contain valuable minerals, but stony material for construction. Further south I saw the landfills and scars on the hilly plateau called El Tablón where the communal tailings deposit is located. I remembered walking around there with a gas mask strapped around my mouth and how much paperwork I had to put into being granted a visit. In short, I looked at this view and figured out that what I had learned during fieldwork could essentially be recapitalized in my new pair of eyes.

Without being too metaphorical about it, my method of data collection in this project can be summarized the following way: First of all, I did two rounds of fieldwork: the first from late June until mid-September 2015, the second consisting in a short, but intense stay for three weeks in January 2016. In essence and by all means, my orientation has been qualitative. I have conducted numerous semi-structured interviews, some of them formal recorded on video and/or audio, but most of them as informal conversations. Still, there is a difference between an interview as an informal conversation, i.e. with a minimal amount of coordination, and the informal conversation that take place spontaneously. The outcome may be relatively similar, but methodologically speaking, the former is, equally informal, but more focused and planned. However, as I am trained in ethnographic methods, I relied heavily on informal settings and opted for as much participation as possible. I did a lot of paperwork in order to obtain permission to accompany ARCOM on their inspections to mines and processing plants. I joined them once a week for a month, and two more days during my second fieldwork. Although I agree that this is very meagre, especially according to anthropological standards, these field experiences were fruitful to me and I attempt to give credence to them in this thesis.

The kind of interaction-based data collection I got through joining ARCOM on their inspections was, in essence, what I struggled to get all the time. I got in touch with people who were involved in mining and managed to visit several sites with local miners as my guides. This was important as a sort of baseline to understand how people worked and to witness the variety of mining operations. The same goes for the processing plants. I visited them alone to do interviews with workers, I visited them on several occasions with ARCOM and I visited them, in a combination with these to variants, with my photographer friend to take pictures and learn about the processes.

Jose Luis Maldonado Quintero, a friend and a photographer from Ecuador (currently residing in Oslo, Norway) was actually a crucial ingredient to my last round of fieldwork. We had planned for this and eventually managed to join up for a ten days stay in Zaruma together

with his wife, Kjersti. I arrived some days in advance and organized a working agenda together with a local guide that had experience working with both foreign researchers and tourists. Our plan was to do a photo documentary of the current mining activity and combine this with my fieldwork approach. This was a methodological success (time will tell if the result – a photo book and exhibitions – lives up to this) in two important ways. First of all, it was very useful to return to the field to gather more data and adjust my earlier observations. Secondly, the presence of Jose Luis and our project of doing a photo documentary was more tangible and familiar to the informants compared to ¨research for a thesis in International Environmental Studies at the Norwegian University of Life Science¨. Put differently, the fact that I was doing a thesis in *Environmental* Studies, did create a couple of incidents where I had to talk myself out of informants' assumptions and prejudices. The alternative would be to avoid saying where I came from, which would have been ethically challenging, at least in formal settings. At any rate, to do a photo documentary with an Ecuadorian photographer with his origins in Machala, provided me with a different methodological approach that very effectively ¨broke the ice¨ if there was one. Obviously, I explained my academic purpose as well, and brought along consent forms for the informants to sign. We visited several mines and processing plants of varied size and scales, we joined ARCOM on inspections, we visited the communal tailings deposit, and we did portraits and interviews of miners, workers, administrators, regulators and several in-depth interviews with old people in both Zaruma and Portovelo. Additionally, and this applies in general to both fieldworks, I talked to people (lay people, researchers, local bureaucrats, historians, friends and relatives in Machala and Guayaquil) about the issues of mining and regulations constantly and exhaustively. I addressed these people with general thoughts, my doubts, rumours and gossip, what I apprehended as contradictions and inconsistencies, and perhaps too many, questions.

The above-mentioned is roughly an outline of my empirical fieldwork. Besides that, I have reviewed the existing research and literature on the ASGM in P-Z. As this is the oldest mining centre in Ecuador and quite well known, there is by now, a considerable amount of research from this place, especially on the engineering properties of the mining cycle and its toxic and biological characteristics. This gave me a point of departure to develop a more critical analytical framework, yet it also gave me knowledge about the natural sciences involved. The same, albeit qualitatively different, can be said about the literature on the local history, which is reviewed in chapter one. In technical words, both these two camps (local history and natural science on ASGM) along with national statistics and official documents of laws and legislation provided necessary references to triangulate my empirical data.

As can be discerned from this, my main method was participant observation in an ethnographic sense. Regarding the importance of securing data validity, Stewart (1998:17) outlines three central notions:

1. *Veracity*, meaning inherent validity or plausibility. Fortified by: long-term fieldwork, a search for discomforting observations, good relations regarding position and role, attention towards context (and its influence) and variation in collecting data (interviews, observations, interaction etc.)

2. *Objectivity*, meaning reliability or logic consistency. Fortified by: being explicit on your doings and beings during fieldwork, feedback from informants, feedback from external colleges.

3. *Perspicacity*, meaning generalization or external validity. Fortified by: intense examination and systematization of data collected, search for comparative, internal dimensions, reorientation, return to the field.

Despite the briefness of my fieldworks, Stewart's points were valuable as an ethnographic checklist. And although this project is clearly of inductive character, I travelled to the field with a set of assumptions and an explicit working research question (see ¨problem statement¨ above). With these three points, however, Stewart reminded me of the importance of ¨discomforting observations¨, ¨feedback from informants¨ and ¨reorientation¨ in the fieldwork context as pivotal to producing a reliable story in the end.

Methodologically speaking, this thesis can be seen as a case study, which includes a ¨detailed and intensive analysis of a single case¨ (Bryman 2008: 52), that is, regulation of ASGM in P-Z. Nevertheless, the analysis exceeds its empirical specificities in the sense that it contextualizes regulation in its national framework and also draws on comparative perspectives with other ASGM sites (within and outside Ecuador), as well as other contexts of resource extractivism. In this regard, it emphasizes the open-endedness of ethnography as captured by Ferguson's reflections on Marcel Mauss' analogy of ethnography with fishing: ¨all you need is a net to swing, and you can be sure you'll catch something¨ (Ferguson 1999: 17). Although I disagree that ethnography, at least my attempts on it, is as arbitrary as this, I agree with Ferguson's accentuation of the lack of control on behalf of the ethnographer (18). The ethnographic method is tricky and highly contingent upon the relation the ethnographer obtains with informants. This points back to the importance of prolonged fieldwork in the anthropological tradition, and although I admit that my study would have profited on more time spent in the field, this was, at least to some extent, compensated for given my familiarity

with the context (see below).

Regarding ethics, I refer, once again (cf. Frækaland Vangsnes 2010:13-4), to Knauft (1996:48-50) and what he terms a ¨critical humanist sensibility¨. This ethical stance relies on two principles: 1) ¨to document and valorize the richness and diversity of human ways of life¨ and 2) ¨to expose, analyze, and critique human inequality and domination¨ (ibid.). In practice, this may equally be difficult in a given situation. Still, Knauft's position indicates a moral/ethical essence that highlights values I find important, not only in a fieldwork context, but also in general terms. More technically, ethics are also about securing the personal integrity of informants. The issue of informed consent clearly relates to this. Accordingly, I got written consents from many informants, but also oral consents saying that I could use their statements in this thesis. While some informants were more eager about me using *their* statements, including their names, I was careful about this as I knew that people could have second thoughts in other settings. Subsequently, I re-approached them to inform them more about my project and to ask if it was okay to use their opinions. Most people said yes, but a very few said no, because of fear that it might compromise their professional integrity. Regarding state officials (e.g. informants from ARCOM or the Ministry of Environment), the process to obtain access was more bureaucratic, and although I could have wished for more access, I am grateful for what I got. In fact, I regard my ethnographic accounts on the work of ARCOM as a unique window into their difficult mandate of enforcing mining legislation. In this context, I additionally got signed consents forms from ARCOM staff.

In general, all names of particular persons (except public officials such as ministers, presidents or local historians) are pseudonyms. Two persons, who we will get to know in chapter four, explicitly and repeatedly said they wished to be paraphrased with original names and I respected that. An important point in this regard however, is that the people I invoke throughout the thesis are hardly representative for their personal biographies. My fieldworks were short and intensive with a clear focus on mining. Hence, I use opinions, practice and statements from people related to their affiliation with my focus. Accordingly, if and when I am critical to these things, I am not targeting people on a personal level, but rather as representations of divergent views, perspectives and opinions as I encountered them during fieldwork.

Apart from triangulation[xv] between empirical data, media coverage, natural/social science on ASGM/extractivism, mining legislation, and Ecuadorian tax statistics, which I prefer to conceive as juggling, there is a personal story to this as well. Briefly outlined, my first visit to Zaruma was in 2000 when I was an exchange student living in Machala. A couple

of years later I returned to Machala and Guayaquil, where I stayed for prolonged periods of time (approximately five years taken together) before and after I married my wife from Machala in 2006. We have frequented Zaruma and its surroundings ever since, but usually only for short trips. Accordingly, I had heard stories of gold and gold mining up there in the highlands, but never really got a firm grip of what was going on. So, eventually, after discussing project ideas with my supervisor, I ended up doing what I have done. Concerning this personal familiarity with Ecuador, it is also relevant to mention that I speak Spanish and that I did three months of fieldwork on San Cristobal, Galapagos in 2009. This fieldwork served as empirical data collection to elaborate a master thesis in social anthropology featuring, without going into specifics, a cultural analysis of masculinity (Frækaland Vangsnes 2010).

I am not being too exhaustive on the issue of methodology here. I hope to compensate for this by presenting several empirical accounts that reflect the way I have obtained my data. These accounts, like the one in the beginning of this introduction, are meant to bring the reader closer to the social reality as experienced by miners and regulators in P-Z. In line with Ferguson (1999: 21), the accounts are not meant to get the whole picture, but to provide the reader with some relevant anecdotes for interpretation. Once again by concurring with Ferguson, these accounts are meant to ¨exceed[s] the argument and in some sense bypass it to speak more directly to the reader¨ (23). Yet, of course, the interpretations are mine and, while I struggle to contextualize them sufficiently, they are subjective and suggestive rather than objective.

The thesis

The thesis is roughly divided into two parts in which chapter one and two comprise the first, and the last three chapters, the second part. As could be seen above, I use pictures to provide for some illustrations before and after the manuscript, but also in between part one and two.

Chapter one accounts for the historical trajectory of gold mining in P-Z. It illustrates how mining has developed from the Incan rulings in the 15th century up to the present and highlights the different governmental regimes conditioning the activity. This is of relevance to conceptualize how the place and the activity have nurtured one another, and to see how the colonial hegemony had the effect of naturalizing the commodification of nature.

Chapter two picks up on the end of the previous chapter and contextualize ASGM in its current situation. The emphasis here is to account for complexity and to review mining

legislation, processing techniques and the economy. Here, I attempt to convey complexity of different dimensions rather than going into depth on one of them. I argue for the importance of conceiving these dimensions together and to acknowledge their interdependencies, an approach that, to my knowledge, has not previously been undertaken.

While chapter one and two comprise an analytical construction that could serve as a foundation for different further elaborations, chapter three takes us to the core of my analytical scope, namely the enforcement of Ecuadorian mining legislation. Here, I present accounts of ARCOM on their field inspections into mines of different sizes and the encounters with different miners.

Chapter four considers the epistemological foundations of the main stakeholders engaged in the politics of ASGM in P-Z. Here, we are introduced to informal miners and their praxis and beliefs, but also to how the mining community opposes governmental regulation. I also illustrate how governmental regulation is implemented through capacitation programs, and the challenges related to this. In sum, this chapter accounts for the politics of mining with an emphasis on different kinds of knowledge schemes.

Chapter five is reaching towards a conclusion. Here, I theorize on issues of power related to the empirical observations and attempt to expand on the theory of interlegality. Lastly, I also reflect critically on the political ecologist approach.

In the very end I present a brief epilogue that includes some suggestions for further research.

Figures are mine if nothing else is indicated. Spanish original quotations are put as footnotes on the same page, yet left in parenthesis if very short. That being said, I am not totally consistent in providing original Spanish quotations. I mainly do it where it seems appropriate and where the English translation obscures or alter emic meaning. Endnotes are provided for each chapter, including online references to newspaper articles and other online sources. All other references are to be found in the very end. All pictures are taken by Jose Luis Maldonado Quintero in P-Z during January 2016.

Notes

[i] There is a problem of definition of both *artisanal* and *small-scale* mining and the distinction between them (see Veiga et al 2015:1). The Ecuadorian Mining Act, however, follow a definition that highlights the volume of production as the determining factor, although it also mentions what kind of machinery can be

used in artisanal exploitation (Art. 134). Nevertheless, the concepts of *artisanal* and *small scale* are employed inconsistently among miners as well as scholars writing about them.

[ii] Currently (May 2016) the gold price is approximately 40 US dollars a gram.

[iii] Prospectors and developers' association of Canada. This annual convention is regarded as the major event for the global mining industry with over 100 nations represented. It is sponsored by global mining corporations, but notably also by ENAMI EP (Ecuador's national mining company).

[iv] Online article (my translation), retrieved from: http://www.ecuadorinmediato.com/index.php?module=Noticias&func=news_user_view&id=2818777215&umt

[v] For a brief résumé on behalf of the Ecuadorian Ministry of Mining see: http://www.mineria.gob.ec/principales-empresas-mineras-interesadas-en-ecuador

[vi] For a general overview on the largest mining projects in Ecuador see: http://www.mineria.gob.ec
The Chinese-owned Ecuacorriente is the proprietor of El Mirador, see: http://www.reuters.com/article/ecuador-mining-idUSL2E8E5D4M20120306.
The Canadian/Swedish corporation Lundin Gold Inc. is the proprietor of Fruta del Norte, see: http://finance.yahoo.com/news/lundin-gold-inc-announces-agreement

[vii] Speech retrieved 1st of May 2016: http://www.presidencia.gob.ec/wp-content/uploads/downloads/2013/10/2007-09-25-Discurso-del-Presidente-en-la-62-Asamblea-General-de-las-Naciones-Unidas.pdf. See also Acosta (2012) for an interesting reflection on these matters.

[viii] See: http://www.inec.gob.ec/cpv

[ix] There is reason to believe that this amount is very low since it is based on the estimates of APROPLASMIN (Owners of the processing plants) that potentially share an interest in under-reporting to avoid increased taxation. For instance, Astudillo (2007) estimated an annual production of 15 tons of gold, almost ten years ago.

[x] In analogy with climate sceptics referring to research that is critical towards a popularized representation of climate warming (cf. Al Gore´s *An Inconvenient Truth*), I admit that this can be used in a reactionary way. Still, I consider it more important to remain true to a critical and empirical approach than to propose a partly false argument only because it may appeal to a larger audience. Methodologically, I consider this as the major point, along with the notion of self-reflexivity, which separates critical research from mainstream environmentalism, media and ¨apolitical¨ research.

[xi] There are reasons to suggest that the Incan empire was equally cruel, or even worse, when it came to manpower and labor exploitation, but I leave this and most pre-Hispanic contextualization out in this thesis.

[xii] Li (2007:287) conceives Arturo Escobar´s *Encountering Development* as a book that develops this argument (rendering places/spaces technical) to apply for the powers that construct, intervene and develop the ¨third world¨. However, she is critical towards elements of *conspiracy* in Escobar´s presentation and likewise critical of Ferguson neglecting the possibility of local agency in his *Anti-politics Machine.*

[xiii] Lukes discusses the relationship between power and responsibility in which he views the relation of structure and agency is an inherent part (2005: 66-8).

[xiv] This also means that I circumvent Actor Network Theory and the nascent literature on the Anthropocene (e.g. Steffen et al 2007; Ogden et al 2013).

[xv] On the importance of triangulation see: Berg & Lune (2011: 6-8).

Man has a history because he transforms nature.
- Maurice Godelier 1986

Chapter 1: History lessons

At the age of 81 years, or ¨81 Christmas´s¨, as he put it, Don Lucho had recently discovered the richest gold ore in his lifetime. He found it in the proximities of Portovelo using old exploration coordinates from the South American Development Company (SADCO), a North American mining company we will soon hear more about. However, the coordinates had been wrong concerning the direction of the ore, leaving him to wander around and not getting it right. Only after he adjusted his search to a north-south direction (as is the conventional ore direction in this region), he was able to follow this promising ore.

By the time I met him, Don Lucho was a happy man, very happy indeed. He had managed to buy the property and finally found reliable companions to exploit the minerals (essentially gold and silver) of his recent discovery. This was his second attempt, after having associated with some ¨buenas ratas¨ (¨rats¨) who had cheated him the first time. He had soon noticed, dismissed the work and managed to keep the rats from the site. His main problem on this occasion, he said, was that he did not own the land and that this kept him from exploiting the ore.

At the time we went to visit the site however, the property was his and he and his companions had just begun to work with an excavator at surface level. What was peculiar

about this discovery, said Don Lucho, was that the ore was situated in a geological fault zone, and that he had found it at surface level. Primary tests of the ore had indicated very promising quantities of gold. In fact, according to Don Lucho, it contained seven and a half ounces of gold per ton of rock material. Seven and a half ounces is about 200 grams of gold. Today, most mining companies in P-Z regard material that contains more than five grams per ton, as profitable. The gold price during my fieldworks was approximately 35 dollars a gram, while currently (May 2016) around 40 dollars. Correspondingly, one does not have to be a mathematician to understand the glimpse in the eyes of Don Lucho. However, after fifty years in this business, he was calm and humble about it. He knew that there was still a lot of work to do and that the ore did not necessarily contain such high amounts of gold in all directions.

At the same time, he was enthusiastic and joyful about the prospect of exploiting the gold. ¨I do not yearn constantly for gold nor do I have great ambitions when it comes to gold. The thing is, in my case, that I like it a lot, and that is something that has fastened to my blood…I like to see it (the gold)¨[3], he explained while he scratched the hillside, removing particles of clay and dirt to make visible the rusty layers of silver indicating the ore. When I questioned him about the role gold has played in his life, he responded quickly: ¨it has been my source for work, for education, everything for my children…¨[4], and continued to say that ¨around here we don´t have…well I really shouldn't say that this land is bad. This soil is good for agriculture, but since gold represents a profitable work, we have to look for it, and as there *is* gold here, even at the surface, are we going to let it trifle away? I don´t think so...¨[5] Don Lucho continued to tell me how he had left Piñas, a neighboring town, to search for gold in and around Portovelo in his early days. It was simple, he told me, ¨you just hiked around with a pan and a stick until you found a promising site where you panned the material and eventually there it was, (the gold)¨[6]. Then, he said, he knew that he had obtained both food and shelter for himself and his family.

The absence of mining regulation and control in Don Lucho's early years reflects the state of affairs until recent times. The principal limitations on mining back then was the lack of capital to invest and, as always, the fluctuating gold prices. These limitations continue as

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[3] *Yo por mi lado, al oro no lo ambiciono, sino que es algo que me gusta bastante, algo que se me ha pegado ya en la sangre que…me gusta verlo.*

[4] *Mi fuente de trabajo para educación, todo para mis hijos, es el oro.*

[5] *No tenemos aquí por ejemplo…bueno tampoco voy a decir que las tierras no valen aquí, las tierras para agricultura son buenas, pero como el oro es un trabajo rentable hay que buscarlo, y como hay oro, y lo vamos a dejar desperdiciar?…creo que no.*

[6] *Te cogías un platón y una palita y te venias a mirar a joder por ahí, y dabas un poco, veías que habías encontrado una falla, aquí fue, y platoneabas y ya está (el oro).*

important regulating structures, but are increasingly accompanied by the governmental efforts to control and regulate the sector. Still, this does not mean that the sector was an anarchy during Don Lucho's youth. Mining concessions and mining titles were distributed and, at least in theory, controlled by the Ecuadorian State since its foundation in 1830. Yet, informal mining has always co-existed with formal and industrial mining regimes. Hence, in the absence of control and regulation, mining activity in P-Z has largely organized itself by adapting, opposing or ignoring the different governmental structures contextualizing its continuity.

In his article on the concept of interlegality in Ecuador, Simon Thomas (2009) defines this to be ¨the interpenetration of different normative orders, mostly between national law and customary law¨ (165). He goes on to say that this requires ¨a situation of legal pluralism¨ (ibid.), i.e. the existence of more than one legal order. His article relies on a case that involves the co-existence of indigenous customary law and national laws where the former is currently (albeit with limited legal potency) acknowledged as a legal order, consolidated through Ecuador´s ratification of international conventions on indigenous rights. The norms of mining in P-Z hardly have the same legal status as indigenous customary laws, nor do they represent a whole set of cosmological beliefs as in the latter case. Rather, norms of mining have developed in response to the conditions of mining activity (colonialism, republicanism, industrialization and capitalism) and the dominant mining regimes taking place. Currently, these norms are notoriously at odds with national mining legislation, but tend to win out since the practical obstacles of enforcing the latter is overwhelming. Simon Thomas, leaning on Hoekema's use of the term ¨semi-autonomous social fields¨ (2004), says that:

> the process of interlegality is influenced by dominant (top down) national laws, as well as by local (bottom up) pressure (…) a distinction is made between a situation of real, or factual (*de facto*) legal pluralism, and official, or formal (*de jure*) legal pluralism. In the latter case, so called ´internal conflict rules´ will guide the process of interlegality, in order to provide more legal certainty¨ (Simon Thomas 2009:165)

The distinction of *de facto* and *de jure* legal pluralism is also remarked by de Theije et al (2014) when they apply the concept of interlegality on ASGM contexts. I will return to how this relates to current enforcement on mining legislation in following chapters. However, I wish to invoke this concept already here because it is useful to keep in mind when reviewing the historical formation of how P-Z became a place and how mining was constituent in this process. Importantly, in the context of P-Z, I interpret legal pluralism to indicate local norms, rules and rationalities that guide the mining operations regardless of, albeit influenced by,

formal legislation. It is a dialectic relation, but uncertain in the sense that enforcement creates opposition as much as compliance. Hence, in the above-mentioned framework, ASGM in P-Z involves *de facto* legal pluralism, i.e. local norms are hardly acknowledged by governmental authorities as a legal structure *de jure*, but are nonetheless highly instructive for the praxis of mining. Furthermore, no ¨internal conflict rules¨ have been formalized. These mediating rules can rather be conceived as continuous negotiations between the actors involved in mining activities. And as we shall see, there has been quite a lot of negotiations on several governing levels throughout the history of mining in P-Z.

As this chapter will illustrate, both Zaruma and, much later, Portovelo were quite literally built on top of their rich deposits of gold. In a Latin American context, this history is unique yet relatively unknown. In the words of the historian Kris Lane:

> The small mountain village of San Antonio de Zaruma is probably the longest-running hard-rock gold camp in the Western Hemisphere, yet it is hardly known outside the southern Andean provinces of the Republic of Ecuador. (2004: 65)

This history expands over more than six centuries and involves both the Incan and the Spanish conquests of P-Z. It includes almost three centuries of Spanish hegemony followed by the independence and the birth of the Republic of Ecuador. Furthermore, history illustrates how, by the end of the 19th century, foreign investments paved way to an unprecedented industrialization of gold mining in Ecuador, represented by the presence of the South American Development Company (SADCO) from 1896 to 1950. Yet, political instability was notorious and social segregation was a dominant feature of the hierarchical society of P-Z in which the Ecuadorian State largely privileged the American company over the local working class. The latter endured an exploitative working regime, and while the first labor unions emerged already during the First World War, the fight for improved working conditions and rights was a tough struggle with few victories. Still, some pressure was made, and after the Americans left in 1950, the municipality of Zaruma obtained partial ownership (along with ex-workers of SADCO) to exploit the main mine of Portovelo, along with the tailings left by the Americans, for another 28 years. After this point however, the mines in P-Z have been characterized by the emergence of a large and complex ASGM sector.

An attempt to do justice to this here is not possible. Accordingly, this chapter provides a brief outline of a long mining history. I seek to answer questions like: *What is the trajectory of mining in P-Z? How has mining contributed in the process of place-making in P-Z? How has mining been consolidated and institutionalized? How can we conceive P-Z as a*

globalized place? Related to the contemporary emphasis on the problems of informality and the use of mercury, history reveals that these practices go hand-in-hand and have been part of the overall mining practice from its very beginning. As such, informality, i.e. mining at odds with formal legal structures, has occurred at the margins of formal mining schemes, but also increased and decreased proportionately with the ups and downs of the latter.

What follows are three sections that track a more or less chronological order of the trajectory of mining in P-Z.

Conquests and Colonial times

There is no existing archeological research on neither pre-Incan nor Incan settlements in the P-Z. Yet there is no doubt about the historical existence of indigenous settlements, which local people will quickly enlist by reference to archeological observations and sites. As thus, while there are trustworthy claims of pre-Incan settlements through de facto observations in the landscape, there are no scientific works on these. Hence, the literature on the history of this region is brief about pre-Incan times, although it asserts the existence of indigenous cultures like ¨chimús, punenos, cañaris, chonos, paltas, tumbecinos¨ (Astudillo 2003:13) in what is currently the province of El Oro. Others, like Lane (2004:67) picking up on Caillavet (2000), suggests that the indigenous population in the Southern highlands of Ecuador was scarce due to wars between Incas, Cañaris and Paltas. At any rate, Murillo Carrión (2010: 7) expresses a general lament on the lack of archeological studies and argues that although some people insist that subterranean gold mining took place centuries before the Spanish conquest, there is no evidence of this. Correspondingly, it is problematic to sustain this claim. Nonetheless, the above-mentioned ethnicities were still around in the colonial epoch and as we will see in the following, they provided the colonizers with much needed manpower, albeit in rather controversial ways.

With the arrival of the Spanish crown in the beginning of the 16th century historical documentation improves significantly. The story told by people in P-Z, which resonates with Cortázar's illustrative book ¨El Oro de Portovelo¨ (2005) and Murillo Carrión's ¨Historia Minera¨ (2010: 22-3), is that the Spanish fleet heading south towards Lima made obligatory stops in Tumbes for supplies. Tumbes, on the coast of Northern Peru, is where the Tumbes River reaches the Pacific Ocean. The Tumbes River, in turn, is formed by the Puyango River Basin with its headwaters in Ecuador, more precisely in the mountains surrounding P-Z. Thus, upon noticing that the river contained golden particles in a colonial campaign that very much

revolved around the prospect of mineral deposits, some of the more adventurous Spaniards decided to follow the river to its source. Another motivating factor was that there were rumors that a significant bulk of the Incan gold designated to rescue Atahualpa from Spanish custody in Cusco, came from the headwaters of the Tumbes River. Henceforth, the Spanish conquistadors followed the river upstream on an ancient path that connected Tumbes with the Zaruma area. Finally arriving there, they confirmed their search upon finding gold in the local rivers and streams. Subsequently, they named the river that runs through Portovelo today, as Rio Amarillo (The Yellow River). Then they continued to climb the hills where they found golden ores at surface level and named the Zaruma mountain as Cerro Rico (Rich Mountain). In 1549 San Antonio del Cerro Rico de Zaruma was founded and a bourgeoning gold mining era was about to take place (Astudillo 2007: 10).

At this stage, hopes were high – Zaruma was considered as one of the most promising gold deposits in the New World and comparisons with the silver mines of Potosí were inevitable (Lane 2004: 65). Yet, as Lane also remarks, there was a lack of work force to effectively exploit the mines (ibid.). From the outset, the indigenous population was scarce and additionally, two rounds of epidemics in the 1550s and 1580s made matters worse. Along with a general and high demand of labor throughout the Andes, this was solved through the colonial institution of *la mita,* which in the case of Zaruma, was proposed by Viceroy Toledo in 1573 and institutionalized a few years later (ibid.). The *mita* was based on the principle of a ¨redistribution of Indians - not lands¨ (Murillo Carrión 2010:16) to the Spaniards for productive tasks, which again was meant to serve the Spanish crown through tributes and taxation. It was actually an adaptation of a similar Incan institution applied to their subordinates (i.e. conquered indigenous ethnicities). In practice, the colonial *mita* obliged all men between 18 and 50 years throughout the indigenous communities, to work for the Spanish in a rotating scheme for very low salaries. The *mita* institution was similar to the *encomienda* institution, yet slightly different in the sense that the former was based on (at least in theory) an alternating scheme, while the latter was of a more permanent character, which included a cultural assimilation of the indigenous towards Spanish beliefs and religion. The *encomenderos* were Spanish natives, while the ones recruiting *mitayos* for the mine owners locally were high ranking Indians who received payment for this service. In the beginning the *mitayos* could alternatively pay their tributes in crops or species, but soon enough, around 1570, these tributes were to be paid in monetary values. In practice, the systems were prone to resemble slavery, especially when considering that indigenous indebtedness was frequent and forced them into a vicious cycle. Nevertheless, these two

institutions came to persist as the dominant labor organization throughout the Spanish colonies until the beginning of the 18th century when they were officially abolished. Yet in practice, similar arrangements continued until the days of the republican independence, eventually evolving into the later hacienda arrangements.

At this point in history, i.e. late 16th century, the Real Audiencia (the colonial administration) had divided their regions into modes of production where mineral mining very much revolved around the rich silver mines in Potosí (current Bolivia) and Zacatecas (current Mexico). In this scheme, what is now the territory of Ecuador was focused on textile production, in particular to feed the growing markets in Potosí and Lima. This was all part of the mercantilist economic system that lasted approximately two centuries before it faded away much due to its inherent assumptions of infinite growth and its lack of economic understanding of the value of labor and trade[i]. At any rate, the focus on textile production led to another institutional set-up that was called *obrajes,* which essentially consisted in indigenous textile fabrics producing cloths to sustain the markets in Potosí (Murillo Carrión 2010: 18). Mining was not abandoned all together in Zaruma, but there were doubts about its profitability in the light of other kinds of productions. This was critically addressed in a rare visit on behalf of an official from the Real Audiencia de Quito, noting that the mines were in a terrible and unproductive state and that the owners used *mitayos* exclusively designated to mine, to perform other work. Put differently, mine owners, essentially consisting of an elite of Spanish descendants, were mining people instead of the gold deposits (Lane 2004: 70).

Simultaneously, a nuancing voice can be found in the words of Fray Antonio Vásquez de Espinoza, a discalced Carmelite who wrote long descriptions from his travels in the New World. Upon his visit to Zaruma in 1614 he portrays a vibrant mining town with abundant gold in mines and rivers (which were panned for gold by the indigenous population), and 36 mills to process the ore (Murillo Carrión 2010: 45). Meanwhile, this barefooted, contemplative friar also wrote, while directing himself to the colonial administration, that there was a widespread gold commerce that avoided paying *quintos* (the obligatory tribute to the Spanish crown). Typically, he noted, the people who manage the *tavernas*, where liquor was sold, bribe the *mitayos* to sell them small amounts of gold directly, which is then re-sold to third parties without paying *quintos* (ibid.). Another interesting feature was also recapitalized by Fray Antonio Vásquez de Espinoza saying that:

> So when they have milled the quote or quintal designated for each mill, they empty the water in each tank and unify or amalgamate the metal with mercury and after the union and the amalgamation they compress this under heavy pressure, remove the mercury and benefice the residue. This is the procedure of how they manipulate the

precious metals in these mines. In the surrounding areas there are a few farms with cattle and pigs. (Vásquez de Espinoza 1960: 578, *in* Murillo Carrión 2010: 47, my translation)

The description is precise and gives testimony to the early use of mercury to amalgamate the gold (i.e. capture the gold from the milled ore) and the subsequent removal of mercury (i.e. to isolate the gold). 400 years later, this practice is subjected to outspread campaigns of mercury mitigation across ASGM contexts throughout the world. The main reason for this is a wide consensus about the malignant health consequences related to mercury exposure and a recognition that the global ASGM sector is currently the largest consumer of the infamous quicksilver (Veiga et al 2015: 268). Meanwhile, the point here is to notice and keep in mind that this practice is old. Indeed, technology, in practice meaning cyanidation and flotation has emerged as more efficient and less contaminating alternatives. Nevertheless, mercury has quite different connotations among artisanal miners compared to scientist or politicians detached from its ¨magic¨ properties. For the former, mercury has provided them with an easy way to perform the pivotal function of capturing the gold, making gold tangible and convertible into material wealth. Accordingly, along with the use of gravity to grind and pan the ore, mercury has been the most central ingredient in gold mining and is therefore conceived in positive terms by artisanal miners.

Returning to the 17th century, after the initial promising 50-60 years of mining in Zaruma, there was a decline - yet importantly never a stop - in gold exploitation throughout the next century. The Zaruma mines were no exception to the colonial exploitation of indigenous people and Lane (2004:71-4) describes this through treating a 1699 petition on behalf of *mitayos* in Zaruma. With the lack of responsible authorities in Zaruma, these indigenous workers actually trekked all the way to Quito to present their appeal to the Real Audiencia. The petition for improvements of working conditions echoed both the pleas of Bartolomé de las Casas and the colonial ¨New Laws¨ of 1542-1543. Concerning the latter, the Church officials in the Cathedral of Quito in 1650 had already suggested that the implementation of these laws, which were meant to contribute to an improved treatment of indigenous people, was a flaw and that widespread abuse had been a reality (Lane 2004: 73). Accordingly, along with a growing concern about the lack of work force to sustain productivity, the petition of 1699 finally led to the official abolishment of the *mita* in Zaruma the following year. Yet, in analogy to a general argument that this thesis makes a point to sustain; laws and legislation is one thing, while practice in the fields of application is another thing. Put differently; although the *mita* was abolished in 1700 and the *encomiendas* in 1718,

colonial abuse of the indigenous population persisted with force (Murillo Carrión 2010: 53).

The beginning of the 18th century was characterized by economic crisis for the Spanish crown. The Bourbon dynasty had taken over power in Spain and launched a series of reforms to modernize production in the colonies with the aim of competing with the ascending potencies of France and England (Mora 2008: 50). However, after two centuries of massive exploitation of both human and natural resources, this proved to be a difficult task - utterly impeded by pests and illness, and natural disasters (earthquakes and volcanic eruptions) in the context of Ecuador (ibid.). There was also a decline in mineral production in Peru, which affected the demands for the once prosperous textile production in the Real Audiencia de Quito[ii]. Eventually this effect was enhanced as the industrial revolution in England with *its* textile production (conceived as qualitatively better compared to the production of the *obrajes*) gradually took over the markets.

The production in the mines of Zaruma was minimal during the first half of the 18th century. This was not because of a lack of gold, but rather as a consequence of the economic crisis and the lack of available work force. As a response to this, by 1777, the Bourbons decided to lower mineral production taxes from 5 to 3% (echoing the current royalties paid by small-scale miners to the Ecuadorian State), monopolize the business of mercury as to lower its costs and establish a fond for the miners (Lane 2004: 75). The effects however, were minimal and anarchic circumstances were reported (Murillo Carrión 2010: 60). What was also reported during these years, was the malignant health consequences related to the exposure of mercury and mercury vapor - resulting in what was termed ¨a pale, weak and unhealthy population¨ (ibid.: 60-1, see also Lane 2004: 76). The question emerging, in the face of these circumstances, was framed straight-forwardly by the Spanish navigators Jorge Juan and Antonio de Ulloa after visiting Zaruma: *Why should the 'naturally indolent' campesinos of the region slave away underground, they asked, when nature made subsistence so easy?* (Lane 2004: 75, my italics)

Although we might ask Juan and Ulloa why they characterized the local peasants as ¨naturally indolent¨, the essence of their question is far-reaching. Not only does it question the logics and moral of its time, but it also raises relevant questions to contemporary extractive industries in many parts of the world[iii]. Moreover, its last part; ¨…when nature made subsistence so easy¨, potentially entails a long philosophical discussion on the human-nature relation (and questions of human empathy and ethics), including a political debate on the moral foundation of extractivism. It also resonates with the question I asked, quite literally, to many informants involved in mining: *Given the dangers and hardship that you endure*

working in the mines, *and the fact that the salary is relatively low, how come you stick to it?* One answer to this was given by Don Lucho in the beginning of this chapter, when he said that: ¨…since gold represents a profitable work, we have to look for it, and as there *is* gold here, even at the surface, are we going to let it trifle away? I don´t think so...¨. Clearly there are many different idiosyncratic answers to this question, yet the fact that mining became such a dominating orientation of subsistence makes the question of becoming a miner all but arbitrary. For instance, Scott argues that:

The choice to become a miner (…) is clearly related to a person's class position, related to living in an economically depressed region, related to having limited choices for a dignified life, and to the separation of life into public and private spheres (2010:221)

Moreover, Scott places this question in the ¨intersections of class with race, gender, sexuality, and region¨ (2010:220), as to indicate the social interdependencies and intricacies involved in making a choice. In this sense, the choice of becoming a miner is not merely a conscious and individual choice, but as much a question about the social conditions surrounding the individual[iv]. Wether Juan and Ulloa put forth their question with or without a progressive agenda in mind remains in the shadows of history. Yet, the humanistic potential in their question was not very much favored by the Spanish crown, who in turn was desperately trying to increase the revenues from the colonies.

Quite contrary to an orientation away from mining, the Zaruma gold mines experienced renewed interest during the last two decades of the 18th century. Yet, despite the Bourbon reforms, the economic crisis, the lack of work force and the lack of technical innovation impeded any substantial development. The mines and the mills remained in the hands of a few opportunists barely making a living.

Perhaps it was as unreasonable to pin Ecuador's hopes for economic revival on gold mining in Bourbon times as it is today, and perhaps there was truly no viable solution to Zaruma's labor problem. But there was still gold in them there hills, and, regardless of outside interest, Zaruma's hard-core miners soldiered on. (Lane 2004: 79)

This was the scenario in Zaruma at the verge of independence in late 18th century. Big changes were about to take place within the next decades. Still, the mining activity proved itself extremely tenacious, facing all sorts of problems during the Spanish hegemony. As the quote above indicates, there was still gold to be found and while the attempts to scale-up and sustain larger production notoriously failed, informal mining consolidated itself as a means of subsistence. Thus, a key point upon summarizing this period is that there is an unbroken

continuity of gold mining since, at least, the Incan conquest of this region. This means that the human population largely adapted to mining as the principal economic activity and by maintaining this orientation through generations, naturalized its existence as part and parcel of this place.

Independence and the emergent Republic

According to Murillo Carrión (2010: 62-3), the weakness of the Spanish crown at the turn of the 19th century was evident, and had been for a long time despite the Bourbon reforms (in particular the orientation towards free trade and government centralization). Revolution and independence was picking up momentum, typified by the Independence of the United States of America in 1776 and the French Revolution in 1789. The latter eventually led to the French occupation of Spain in 1808, and an accelerated weakening of Spanish colonial power. Yet according to Mora, even more important - though indirectly related to these historical events - was the autonomous movement in the colonies (2008: 61-3). Powerful elites, who had gained economic power either as landowners or merchants, developed the *hacienda* system in tandem with their increasingly autonomous ambitions. As already mentioned, the *hacienda* system had its background in the *encomienda* institution and equally based itself on the exploitation of indigenous and Afro-American manpower. In practice, many *encomenderos* acquired large lands, i.e. *haciendas* for agricultural production. As colonial power diminished, revenues from this production were gradually directed into private hands, a tendency that consolidated the economic foundation for the revolution. Accordingly, as local elites gained economic power in and around the metropolis, colonial bureaucracy was conceived as an obstacle towards economic development. Hence, these elites (later to be renowned as *latifundistas*) entered the political scene with a progressive and autonomist agenda[v]. Finally, in parallel with Napoleon invading Spain, this momentum of independence surfaced in the revolution in Quito (1808-1812). Although the colonial forces battled these uprisings in Quito and re-established its power, this was the beginning of the end for the Spanish hegemony (ibid. 63-8). Ten years later (1822) colonial independence was symbolized by the famous encounter in Guayaquil between Simon Bolivar (fighting his way south from current Venezuela) and San Martin (on his way north from current Argentina, Chile and Peru).

The mines of Zaruma were partly abandoned during this period and the population continued to live, with a few exceptions, in a general state of poverty (Murillo Carrión 2010:63-7). Yet, with the hope that a change of regime would improve the conditions, the

local oligarchy, supported the movement of independence[vi]. During this period agriculture, particularly sugar cane production, complemented and actually bypassed the economic importance of mining. Curiously, several observers attributed the poor health of the workers in the mines to what they believed to be exposure to natural deposits of mercury in the mountains (ibid. 60-1, 71). This did not make sense as the colonial exploitation of the mines and its subsequent beneficiation process had relied on the purchase of mercury from elsewhere (cf. the Bourbon decision to monopolize it and lower its price). Later on, the claims of mercury ores in the Zaruma mountains were refuted by Theodor Wolf who re-claimed this to be ores of barite (a mineral partly resembling mercury in color). Wolf, a German scientist, was hired by the young Ecuadorian government in 1876 to report on the mineral potential of Zaruma (ibid. 73-6). His detailed and elaborated study[vii] reflected two important features that would eventually incentivize a major development towards the end of the century: 1) the mountains had rich ores of gold, silver, copper and zinc, and 2) the historical and present exploitation was inefficient and superficial. In other words and according to Wolf, economic success was merely dependent on solid investments.

By this time, the Republic of Ecuador had seen the light of day (1830) after a short period as part of Gran Colombia, which included the territories of current Colombia, Venezuela, Northern Peru, Panama, parts of Brazil and Guyana. Struggling to consolidate itself during the first decades, the Ecuadorian Republic had three main centers; Quito - the capital, Cuenca - center of the Southern Andes region, and Guayaquil - a burgeoning center for commerce and export (Mora 2008:75-6). Zaruma related mostly to the renewed ambitions of the central government to exploit the mines and to become a strategic point for state revenues. Hence, the insistence of President Garcia Moreno during his last period of administration, led him to issue a decree of land expropriation in and around Zaruma in 1875, a decision that in practice meant the establishment of the first Ecuadorian mining concessions (Murillo Carrión 2010: 72).

With these events, in particular Theodor Wolf´s encouraging report, mining was once again on top of the game in Zaruma, and private interests were increasingly attentive to news from this little mountain village. The first attempt however, consisting of a partnership of Ecuadorians and a Chilean company, failed to succeed because of a lack of capital and technical resources (ibid.). Nonetheless, some of the associates from this partnership continued to work and finally managed to get financial aid from England. Accordingly, in 1880 the Great Zaruma Gold Mining Co. Limited was founded with a starting capital of 250 thousand English pounds (ibid. 77). Shortly after, the Ecuadorian congress established

Zaruma as a canton in the new province named El Oro (The Gold), a structure that has persisted ever since.

At this point, there was optimism about the regional development the new investments in mining would provide. In 1883, this was accentuated in a presidential decree to build a railroad connecting Zaruma with the Pacific coast. This decree, however, only materialized partially at a much later stage. Meanwhile, the remoteness of Zaruma turned out to represent an obstacle for the newly established mining company[viii]. It was for instance problematic to introduce the machinery necessary to scale up the production. Faced with these challenges, success was highly dependent on sustained investments, and, inconveniently for the local partners, English investments were increasingly directed towards the newly discovered mineral reserves in South Africa (Murillo Carrión 2010: 78). Hence, despite the promising explorations made by the English enterprise, it failed to succeed. Nevertheless, the English attempt had received international attention and was paralleled by several mixed enterprises with both French and Chilean capital working on adjacent concessions. Motivated to attract foreign investments, the Ecuadorian congress had furthermore published *El Código de Minería* in 1887, very much based on Wolf's reports, where detailed information about the mineral ores could be found (Astudillo 2007:12-21). A climax and a decisive moment was finally reached when the newly formed South American Development Company, with their backbone in the Vanderbilt Corporation, bought the English stakes and installations in 1896. This action was to commence a new mining era for Zaruma, and along with a number of things, the birth of Portovelo, as we know it today.

Industrialization and corporate governance

At the turn of the 20th century, the United States of America was a nascent giant ready to take over the world where England had left it. Companies like Standard Oil literally grew out of proportions and the fundamental basis for this proliferation was the aggressive exploitation of natural resources. After stealing all the lands from Native Americans on the North American continent, the big corporations, which essentially dictated the political scene as well, looked south towards Latin America. Both the Rockefeller and the Vanderbilt dynasties were eager to expand their corporate territory to include the continent south of Rio Grande. One of their actions was the establishment of an American mining company in Portovelo.

It is worth noticing that at this stage and until the economic depression during the 1930s, the gold standard prevailed in most Western countries. The gold standard meant that

gold was the key value reference in the economic system. This essentially meant that SADCO exploited the gold in Zaruma, shipped it off to the US where the gold was sold and accumulated in the reserves of the US national treasury bank. With the prevalence of the gold standard, these reserves were directly correlated with the bank's ability to print money, and directly correlated with the economic growth in the US. The revenues directed to the Ecuadorian economy on the other hand, were marginal. SADCO was practically exonerated from paying all patents on their mining concession and all import taxes during the 54 years of operation in P-Z (Murillo Carrión 2010: 85).

In 1896, SADCO acquired the rich concessions of the defunct English mining company and Quebrada Mining Company (a mixed enterprise including Theodor Wolf as one of the proprietors). Gradually, SADCO acquired more concessions and in 1924 it had 40 square kilometres of exploitable land at its disposal. The work force was provided from the neighbouring provinces of Loja, Cañar and Azuay, particularly recruited amongst mestizo farmers and the indigenous people from Saraguro[ix] (Murillo Carrión 2010: 83-4). The operations were highly dependent on the cooperation with the Ecuadorian State, yet considering this history (and also with a concern towards current Ecuadorian extractive development), it is as if the Ecuadorian governments reasoned the other way around, i.e. that their success was dependent upon SADCO's success. Seemingly, the Americans dictated their own terms and conditions in P-Z, and when there were occasional protests like the strikes in 1919 and 1935, SADCO received help from the Ecuadorian army to ¨calm things down¨. The economic power asymmetry between SADCO and the Ecuadorian state, especially during the Ecuadorian economic crisis around the First World War (partly due to a drop in cacao prices), was striking. Consequently, offhand comments like the following were overheard:

> the American businessmen felt so powerful confronted with the flimsy Ecuadorian State that their manager was saying; ´outside Ecuador I feel obliged to follow laws, yet on Ecuadorian territory it's different, here I do and undo with a handful of gold´¨ (Ycaza 1983:233, cited in Murillo Carrión 2010:98, my translation)

SADCO's mining installations were totally different from any prior mining activity on Ecuadorian soil. In 1916, the symbolic Pique Americano was raised in Portovelo. This 40-meter-high shaft construction served as a mechanical entrance and exit for both workers and minerals to the large mine underneath it. This mine was named Mina Grande or simply Portovelo, and had 13 levels (each level separated by 30 vertical metres) of tunnel systems. At the time of its construction, it was the deepest mine in the world, and it served to exploit some of the richest ores encountered in P-Z[x] (Astudillo 2007: 35). In 1918, a new processing plant,

with a capacity to process 300 tons of material a day, was constructed (finished the following year). It was designed to use cyanide potassium for the processing of the ore, but this technique was complemented with the use of mercury amalgamation. The tailings from the processing plant were scattered along the Amarillo River in what is currently the town centre of Portovelo (Murillo Carrión 2010:86-88).

In 1923, SADCO had about 800 itinerant workers working 300 days a year and a work camp consisting of approximately one thousand people (91). At this stage Zaruma had 5000 inhabitants (including Portovelo) and 70 Americans living in their own camp with their families. It was a segregated society with a clear hierarchy: the Americans on top, followed by their most loyal mestizo workers and a few powerful families, subsequently followed by the workers of the mine and local lumberjacks providing wood for the mines, and lastly; local *campesinos* (both mestizos and indigenous) who combined their cultivation with informal subsistence mining (both small tunnels and alluvial panning)[xi]. It is worthwhile to say that this hierarchy is less clear today as the society and the economy is more diversified. Yet, in socio-economic terms, the main structures prevail: large external mining companies are situated in the privileged end, while relatively poor campesinos/informal miners are found at the less privileged end.

In 1924, new ores were discovered and located. From this period, Ecuadorians were for the first time included into SADCO´s administration - in the beginning very restrictively, later more liberally, depending on merits and social position. However, some of these Ecuadorians became the most loyal defenders of the interests of the company contributing significantly to consolidate its power and exercise of power[xii]. Later on, SADCO also managed to acquire influential individuals as their partners and lawyers to negotiate terms with the Ecuadorian government. (Murillo Carrión 2010: 93). Although the first labor movement was established already in 1912 (Asociación Protectora del Minero), its political power was marginal. Nevertheless, it produced the first strike in 1919 where SADCO was pressured to sign the (very basic) demands of the workers. Yet, few changes materialized (cf. 89-90). The first significant confrontation on SADCO's privileges came in the late 1920s through a series of denouncements. A law was signed in 1929 saying that all mining companies were obliged to pay income tax and tax on their mineral sales. In the Ecuadorian Parliament however, SADCO´s lobbyists fought for their company's interests and managed to avoid this payment for a number of years (94-5).

The mechanism of corporate power persuading governmental politics was repeated throughout SADCO's time in P-Z. It applies as much to tax avoidance as to the welfare of the

workers and literally any critical concern about this mining regime. Along with the above-mentioned asymmetry in economic power, a key dimension to understand this is by considering Ecuador´s political instability. Between 1925 and 1948 there were 27 different Ecuadorian governments in charge, meaning that any reform attempted to increase state revenues or control of SADCO´s operations in P-Z, was at best of a temporary character (107). For instance, Federico Paez, the President responsible for aggressive military measures against the labor strike in 1935, was replaced by the progressive General Alberto Enriquez Gallo. The latter reviewed the mining contracts of SADCO, demanded the payment of royalties and tax, and actually sent military battalions to take control over SADCO's installations in the beginning of 1938 (103). And while this act forced them to sign a new contract with the government, in 1942, during the government of President Arroyo del Rio (ex-lawyer of SADCO), the contracts were revised again, this time to the advantage of the company, yet maintaining the tax rate at 12% (108).

From 1945 the municipality of Zaruma began to receive 30% of the total amount of the taxes paid by SADCO, which importantly never benefitted the population of Portovelo, and thus may have contributed to the resentment of the latter towards Zaruma (ibid). Despite SADCO's long hands into the Ecuadorian governments, there was a socialist movement picking up momentum around Latin America after the Second World War. In P-Z, the union movement had matured (e.g. organized across the country) partially as a consequence of the unfair treatment and in the end, SADCO's manipulative power had diminished to the extent that the administration was considering a withdrawal from P-Z. Adding to these conditions was a tragic accident in 1946; a subterranean flood in the Portovelo mine, leaving the deepest levels with the richest ores under water (109). Besides the human tragedy, this was a significant economic drawback because the company was not able to recover these depths[xiii]. In 1950, SADCO withdrew voluntarily from P-Z. Their official argument was a decreasing density of gold in the extracted ore, a development that would eventually leave the mining operation unprofitable (115)[xiv].

There are several estimates of the total quantity of gold and silver extracted by SADCO during their 54-year presence in P-Z. Some of them are mentioned by Astudillo (2007: 75-6). Compared with the information presented by Dynasty Metals & Mining Inc, proprietor of ELIPE Ltd., who currently holds many of the old SADCO concessions, there seems to be a consensus on approximately 3,5 million ounces of gold (almost 100 tons of gold)[xv]. I will return to the issue of value in the next chapter. Here it suffices to consider that except for symbolic royalties and some infrastructure, this considerable amount of gold did

little to develop P-Z or Ecuador (cf. Astudillo 2007:75). In the words of Alfredo Valarezo, alias El Toro, a 96-year old informant, born and raised in the outskirts of Zaruma: ¨it only left us with some chopped forests, some contaminated rivers, and quite a lot of sick people¨.

With SADCO on its way back to the US, the Ecuadorian government decided to form a new mining company to continue where SADCO had left. CIMA S.A (*Compañía Industrial Minera Asociada*) was established as a mixed enterprise consisting of former workers and senior employees from SADCO, and the municipality of Zaruma (Astudillo 2007: 79-80). A major reason to embark on this endeavour was the sky-rocketing unemployment that came along with SADCO´s exit. The other reason was of course the never-ending search for gold and profit, this time increasingly in the hands of the Ecuadorian State. Ironically however, and as a consequence of the State's lack of industrial mining experience/capacity, CIMA's first manager was Geo A. Davidson, SADCO's last manager (ibid.). CIMA was created through a Presidential decree (Nr. 518 from 9th of December 1952) that categorized it as an industrial company for social benefits with few tributary obligations. After four years, the senior employees holding 35% of the stakes sold out, leaving the company in the hands of the municipality of Zaruma and ex-workers from SADCO. The work force was reduced to approximately 500 persons, i.e. a third of SADCO's workforce, and massive migration took place. Still, the most fundamental problem for CIMA, a problem that resonates with the early colonial breakdown of mining activity, was its lack of capital to invest in the mines and perform explorations. Accordingly, CIMA faced economic collapses one after another (ibid. 80-95; Murillo Carrión 2010:135-9). Yet, amid this general decline, there were occasional discoveries of rich ores that provided a temporal boost in production, which importantly served to sustain the orientation towards mining. During the military dictatorships in the 1970s however, CIMA's decline accelerated and finally led to its bankruptcy in 1978. All installations and machinery was transferred to the Ecuadorian State, i.e. the Ministry of Natural Resources (Astudillo 2007:95). The mines on the other hand, were soon invaded by cooperatives of artisanal and small-scale miners who had either worked for CIMA/SADCO or in parallel as informal miners. And with the end of the last dictatorship in Ecuador (1979), a burgeoning ASGM sector was on the move in P-Z.

Concluding remarks

In this chapter, I have traced the history of mining in Zaruma back to its early days prior to and during Spanish hegemony. I have remarked upon the organizing principles of labor in the

colonies, and how the *mita* institution prevailed in the mines of Zaruma in analogy with other mines and exploitative modes of production in the New World. Furthermore, informality and opportunistic regimes related to gold mining in Zaruma surfaced instantly and in parallel with organized and formal mining regimes. And while the largest mine operators in long periods struggled to keep up the activity due to lack of investments, manpower and a number of problems in the colonial administration, the informal miners were more flexible to cope with these challenges. Hence, the latter consolidated itself as a means of subsistence for low-income people throughout the colonial times. Likewise, in regards to the methods of processing the ore that was taken out of the mountain and rivers, I have noticed the early presence of mercury in the beginning of the 17th century. Undoubtedly, mercury was used alongside gravity concentration, but the point is that the use of quicksilver, which currently constitute one of the major environmental hazards related to ASGM, represented the conventional way to capture gold particles for centuries. Moreover, its unique property to capture gold is, if not magic, a technique that made gold tangible and a cheap and simple technique that has sustained the autonomous character of informal mining. Regarding the legacy of this informality, I have also illustrated that illegal gold business (i.e. revenues escaping royalties to the Spanish crown) was similarly reported in the beginning of the 17th century. Upon acknowledging the continuity of informality it is possible to discern this version of gold mining as a useful vehicle for local people - both as a means of subsistence and a means to autonomy - fulfilling fundamental human needs.

While informal mining came to proliferate with the collapse of CIMA in late 1970s, it always existed alongside larger mining schemes. Regarding the latter, the story of SADCO is emblematic for the history of P-Z, especially for Portovelo that originates from this company's working camp. In huge contrast to artisanal miners, this company industrialized gold mining in P-Z to a scale only comparable to the largest, contemporary gold mines in the world. What I wish to emphasize here is that these large exploitative regimes, epitomized by SADCO, and preceded in various forms since the beginning of the colonial epoch, have not represented any major economic development of P-Z. The exception is the infrastructure that mainly served the mining regime itself and the jobs it sustained. Rather, as El Toro (my 96-year-old informant quoted above) indicated; the history of mining in P-Z is much more a story of human and environmental pain, suffering and injustice. A mercantilist or more precisely, a bullionist dogma prevailed, not only during the Spanish hegemony, but also during SADCO's hegemony in P-Z. The guiding rationality in this scheme was to extract as much gold as possible at the lowest possible cost.

While SADCO represented a significant increase in investment, this was only directed to the facilitation of exploitation. All other costs (wages and welfare measures) were notoriously minimal and accompanied by the company's rhetoric of hard times and the need for austerity. The reality was truly a stunning contrast; SADCO made millions of dollars while the miners in P-Z who survived the dangers and hardship of this exploitative regime, were left with silicosis, tuberculosis and other chronic illnesses. No measures were taken to re-forest the hills, no measures were taken to mitigate the polluted rivers. Importantly, the political instability of Ecuador was partly a prerequisite for SADCO's success, and the same phenomena is highly characteristic for Ecuador's 50-year-old history of oil extraction in the Amazon. However, in the context of government regulation and responsibility seen through the eyes of local people in P-Z as well as indigenous people throughout the Ecuadorian Amazon, the Ecuadorian State has been a true accomplice in these happenings. In this picture, it is quite understandable that many people in P-Z bear a deep resentment towards the State who in turn continues to prefer large, external mining companies (who are supposedly easier to control and regulate) and, despite increased legal recognition, continues to marginalize artisanal and small-scale miners. The point here is that the process of interlegality as touched upon in the beginning of this chapter, is deeply influenced by this resentment towards any top-down legislation. Through the gaze of local history, top-down legislation has contributed to a resource curse (wealth ending up anywhere else but in P-Z), a situation of path dependency (mining is what we can so we continue to mine) and marginalization of artisanal miners.

However, this history has also made gold mining an intrinsic component to the place and the people. In P-Z, mining is intimately linked to local identity, and to a degree that is only comparable to fundamental constituents like religion (Catholicism) and language (Spanish). Don Lucho's remarks in the opening of this chapter indicates this intimate link between gold and life. Although his recent discovery of a golden ore at surface level may be quite unique in present times, his story and relation to gold and gold digging is representative for many old people in Portovelo. When I asked him if he really believed that this ore would prove as promising as the first tests had shown, he answered; ¨la naturaleza no me falla a mi¨ (¨nature will not let me down¨). In this comment, Don Lucho applies the term ¨nature¨ as a substitute for the economic relationship between resources and the markets (cf. Scott 2010:212). This gives testimony to the commodification of nature, consolidated through centuries of contact with external markets, to become the ¨natural¨ and ¨objective¨ way to conceptualize nature in P-Z. In her book about mountain top removals (MTR) in the

Appalachian coalfields, Scott depicts the above-mentioned as far from a ¨natural¨ or ¨objective¨ conceptualization, but rather as ¨a traditional white middle-class orientation towards the environment¨ (211), which ¨…reveal a cognitive separation between his own self-interest, as reflected in his personal property, and the non-human nature threatened by MTR, which he considers a mostly altruistic concern for environmentalists¨ (ibid.). Hence, despite several cultural, political and economic differences between P-Z and the Appalachian coalfields, there is a commonality consisting in a ¨culture of extractivism¨ (8) which has naturalized both places as extractive contexts and shaped the morality of mining. I will return to this in chapter three.

On the issue of legal pluralism and interlegality we can roughly conclude with Simon Thomas' observations (2009:171-2) that the Spanish colonial hegemony was characterized by a segregationist model (Spanish laws co-existing with indigenous customary laws as long as the latter did not oppose or interfere with the former), replaced by an assimilationist model during the first century of the Republican era (customary laws becomes illegal and seen as obstacles towards building a nation) and finally, from the 1920s, by an integrationist model in which land reforms was founded upon certain recognitions of indigenous rights and customary laws. This last model has eventually led to full constitutional recognition of indigenous rights (and customary laws), as a result of a strong indigenous movement from the beginning of the 1990s and accordingly a shift from *de facto* to *de jure* legal pluralism. As mentioned above, indigenous customary laws are a much more comprehensive system that includes all domains of life resting its case on indigenous ontology and epistemology. Accordingly, it differs qualitatively (in scope and elaboration) from the norms of mining praxis among artisanal and small-scale miners. Yet if we conceive mining norms, in line with de Theije et al (2014), as an ¨engaging legal system¨ at odds with formal national legislation, there are some similar challenges for the Ecuadorian State. For instance, current national mining legislation (cf. the Mining Act of 2009 and Presidential decrees 119 and 120) contains a special framework for artisanal and small-scale miners that recognize many particularities of this kind of mining. Similarly, Simon Thomas (2009:167) observes that indigenous customary laws survived for centuries due to its local legitimacy and effectiveness, a trait that also applies to the norms that has guided mining praxis in P-Z. For instance, the use of mercury has been, and continues to be, widely accepted among artisanal miners, in addition to a long tradition of getting rid of mining waste and tailings in the rivers. Likewise, tax avoidance and informal gold commerce has been notorious through all stages and all scales of mining operations, and continues to prevail. Another commonality between indigenous customary

laws and local mining norms in P-Z, is that they are both markers of identity established on shared beliefs and values which ¨recognizes the need to resolve conflicts through negotiations and by reaching a common ground¨ (ibid.). This being said, the differences between indigenous customary laws and the normative framework of mining in P-Z, clearly outweighs its similarities, which again impedes a further comparative analysis here. My point however, concerns the issue of governmental regulation and in this gaze, both customary laws and mining norms are intimately linked to praxis (past and present) which, rather than subjugating itself to national mining legislation, confront and adapt to formal laws, i.e. the process of interlegality.

The next chapter addresses the emergence of ASGM in P-Z and takes us into the present complexity.

Notes

[i] There is much to say about this economic history that I will not treat here, including the question of whether or not traits of mercantilism continue as a constituent element in modern capitalism. However, for the curious reader, the book *Ethnicity, markets and migration,* edited by Olivia Harris and Enrique Tandeter (1995), may provide a good starting point. On the end of mercantilism (and the beginning of liberalism) this is famously analyzed in the criticisms and insights of Adam Smith (*The Wealth of Nations*) and his predecessors, especially John Locke (e.g. *Second Treatise*).

[ii] The Real Audiencia en Quito was, after a series of decisions back and forth, resituated to belong under the jurisdiction of what was then the new *Virreynato de Santa Fe de Bogota* from 1739 (Mora 2008:53-4).

[iii] See for instance Kirsch (2010, 2014).

[iv] Essentially this is a question of structure and agency (cf. Giddens 1979). The point here was to accentuate structures that contextualize and inform individual decisions without dismissing the potential for agency or resistance to the same structures.

[v] The Catholic Church also played a pivotal role in these happenings. Not only did it acquire large land areas (some of it still intact today), but it was principally loyal to the Spanish crown, although many clerics sympathized with the movement of independence (Mora 2008: 63).

[vi] This was, however, a complex process where the local administration and local elites in Zaruma changed its loyalty several times in an opportunistic fashion (Murillo Carrión 2010: 67-70). For a further reading on this very period see Salmoral (1994).

[vii] This is comprised by two publications of Wolf: *Geografía y geología del Ecuador* (2006) and; *Relación de un Viaje Geognóstico por la Provincia de Loja* (1879).

[viii] However, at the end of the 19th century there were several private mining companies at place in P-Z. See Astudillo 2007:26-7 for an overview.

[ix] Men from Saraguro (*saraguros*), a small town in the Loja province, not too far away from P-Z, has a long tradition as miners and represent a continuity of indigenous manpower in P-Z. Several companies have a tradition of hiring these men to work in the mines and/or the processing plants. For instance, BIRA S.A. (a Guayaquil based family company, currently the second in size) at one point began to transfer the salaries to the Saraguro wives and not the men, supposedly to keep the latter from drinking away their money (pers. communication with well-informed informants).

[x] The great wealth extracted stands in stark contrast to the pain and suffering endured by the mules (who, once entered the tunnels, never returned to see daylight again) and miners (facing all sorts of accidents and respiratory illnesses) without receiving any compensation. See Astudillo (2007:36).

[xi] On segregation and social control see Murillo Carrión (2010: 125-7).

[xii] On the issue of secret agents (SADCOs men) infiltrating the labor movement in P-Z see Murillo Carrión 2010: 96). See also Nash (1993) for a similar observation from the tin mines of Bolivia.

[xiii] MINESADCO, the company who currently exploit the old Portovelo mine, is still struggling with this flood. They pump water out of the mine 24/7 but are only able to operate six out of 13 levels.

[xiv] For a more detailed review on the happenings surrounding SADCO´s exit see Murillo Carrión (2010: 115- 7) and Astudillo (2007:74-8).

[xv] See http://www.dynastymining.com/operations/zaruma

Dirt is matter out of place
Mary Douglas 1966

Chapter 2: Contemporary complexity

The emergence of the ASGM sector as we know it today began immediately after CIMA's bankruptcy in the late 1970s. Miners who had previously worked for CIMA and/or SADCO, formed alliances, established cooperatives and organized among themselves to exploit the old and easily accessible mines. State interference was low and this development was largely fuelled by local resentment to national authorities who had failed to assist and develop CIMA, and also, more generally, failed to control and regulate mining concessions in P-Z (Sandoval 2001: 3). The development of a highly informal ASGM sector in P-Z was paralleled by the emergence of the ASGM sectors of Ponze Enriquez/Bella Rica (a three-hour drive north-west of P-Z) and Nambija (in Ecuador's Southern Amazon) in the beginning of the 1980s. A significant explanation to this was a peak in gold prices in late 1970s (see figure 3 below). An important difference however, was that the other ASGM districts emerged rapidly without any planning or control, literally transforming these places into chaotic contexts of mining and contamination in a matter of few years[i]. In P-Z on the other hand, not only did local

miners rely on a long history of mining, but many of them had experience from larger mining operations (SADCO/CIMA) and a capability to envision joint ventures transforming into smaller versions of the former. In essence, there was a strong entrepreneurial spirit about the development of the ASGM sector in P-Z, a development that articulated and reinforced itself with the emergence of numerous processing plants along the Calera and Puyango River during the 1990s (Sandoval 2001: 3). Additionally, relatively large actors, like BIRA S.A., were established already in the beginning of the 1980s, giving continuity to relatively large mining operations, and importantly; demonstrating to the rest of the sector, an undertaking that controlled large part of the mining cycle (exploration-exploitation-processing-smelting-refinement-sale).

In parallel with these middle-sized operations being established in P-Z, from the mid-1990s, large companies like the Canadian-based TVX Gold Inc.[ii] commenced mapping and explorations in P-Z by reaching agreement with local miners. Their work was taken over and extended by IAMGOLD[iii] who purchased numerous concessions for prospection and exploration. According to Sandoval (2001: 28), IAMGOLD's operations occurred under a strong cooperation with local miners, and little State interference, and the outcome produced mutual benefits. Yet the most significant benefits, it seems, came into the hands of Dynasty Metals and Mining Inc. who in 2003, after IAMGOLD was bought out by Mineaustralia S.A (a company owned by the general manager of Dynasty), was subsequently acquired by the former. And as we will hear more about, Dynasty is the mother company of ELIPE Ltd., which is the largest mining operator in P-Z.

Meanwhile, while these corporations attempted to get their grip on the gold deposits, there was an abundance in artisanal mining operations going on as well. Young local men, often with close relatives working in the sector, applied the same technique as Don Lucho explained in the previous chapter, and quite literally found gold a ten-minute hike from their house. For instance, Juan, now a superintendent of a relatively large mine, explained to me that he spent the evenings and weekends of his youth mining the surface of ¨some hills¨ and obtained so much money that he did not know what to do with it. I confronted him with the fact that the gold price during the 1990s (the epoch he referred to) was relatively low compared to the accelerating growth from the turn of the millennium. His reply was plainly that there was an abundance of gold easily accessible. Juan was concrete and honest about the ¨happy 90s¨ and said that once a week, he and his close companions sold off their material to one of the processing plants and subsequently went to ¨El Harem del Minero¨ (the local brothel) where they split their shares, occasionally spending half their money the same night.

¨I had no reason to worry¨, he said to me, ¨because I knew that I would obtain the same amount of gold or more the following week¨. Hence, Juan spent his school days supplying his classmates with whatever they wanted from the candy shop and gaining full economic independence while still a teenager.

The point in this introductory vignette is to briefly pick up on the previous chapter and underline the co-existence of several kinds of mining operations that characterize the contemporary ASGM in P-Z. I have already remarked on how informal mining has a long continuity at the margins of larger and dominant mining regimes. This continuity continues today, but an important difference that came along with the exit of CIMA was the formalization of numerous local cooperatives and the emergence of a profitable business through the establishment of several processing plants. An emergent problem for the Ecuadorian State however, was that this development was dominantly conducted on an illegal basis with regards to the mineral commercialization (basically without any fiscal income) and quite literally by dumping all waste into the rivers.

In this chapter I seek to untangle some of the present complexity involved in gold mining in P-Z. I will not be exhaustive because, in analogy to the history of mining, this is a long story that involves many areas that are better treated by others. For instance, there is a much literature on the processing techniques and its consequences for both the environment and human health, including long-term studies (Prodeminca 2000). I will be brief about this, yet highlight some relevant aspects. Likewise, it is possible to ponder at length on the issue of (economic) value related to ASGM in P-Z. I will be brief about this as well, but underscore the fundamental traits and developments. Most importantly, in a pursuit to understand current regulations and the challenges of interlegality, I will start this chapter with some remarks on current Ecuadorian mining legislation. I then continue to categorize the mining operations according to legislation, yet in the critical light of empirical observations. Subsequently, I focus on controversial and non-controversial (depending on one's position) processing techniques and their inherent links to contamination. Lastly, I finish off with an analysis and a consideration of fiscal income and distribution.

Ecuadorian Mining Legislation

There are two key legal texts that frame mining operations in Ecuador – the Constitution from 2008 and the Mining Act of 2009. Alongside these legal texts are the Presidential decrees 119 (general regulations to the Mining Act), 120 (regulations for the special regime of small-scale

mining), and 121 (environmental regulations to mining activity). Much of the regulations in these decrees are incorporated in the latest version of the Mining Act of 2009 (reformed 18th of December 2015). Additionally, there are a number of guidelines and instructions related to specific areas within mining legislation[iv],

In Ecuador, as in most countries, the Constitution sets the overall legal framework for other, more detailed laws. Regarding ASGM and other extractive industries, the Constitution is of particular relevance in the following areas: Article 71-74 on the rights of nature; Art. 313-318 about the role of the State in its strategic sectors in which mining of non-renewables is considered[v]; Art. 395-399 about environmental principles; Art. 400-403 on biodiversity; 404-407 on national patrimonies and ecosystems; Art. 408 on natural resources; Art. 409 and 410 on soil; and Art. 411/412 on water. These articles reflect a very ambitious governmental agenda in relation to the safe-guarding of the environment and indigenous cultures (cf. ¨a will to improve¨ in chapter 3). The State is entitled as the benevolent guarantor of ¨nature´s rights¨ (Art.71-74), yet importantly maintains *its* right to decide (through a Presidential petition and declared parliamentary support) to exploit natural resources anywhere on Ecuadorian territory (Art. 407). Regarding natural resources, the Constitution also highlights that ¨The State will participate in benefitting from exploitation of these resources in an amount that will not be inferior to the company that conduces the exploitation¨ (Art. 408, my translation).

A legitimate question, in relation to the last quote and the mining companies, is: how is this compatible with the demand of 3% royalties from small-scale miners, 4% from medium sized miners, or 5% from large-scale mining (cf. Art.93)? A governmental representative would probably point to the different kinds of taxes that the companies are obliged to pay on top of the royalties. Still, such an assumption relies on a coherency between the amount of production being declared and the actual amount being exploited. In the case of P-Z, and I assume in other places as well, ARCOM does not have the capacity to monitor this, but simply rely on the trimestral reports offered by the mining companies. As I will illustrate in the case of ELIPE Ltd., who publish their production volumes online (and are categorized as small-scale miners who are not obliged to pay windfall tax), the idea that the Ecuadorian State is benefitting (economically) as much as this company is simply absurd.

Yet, few miners in P-Z would agree that the State *should* gain as much on the mining as the companies do. In fact, this Constitutional idea contradicts the economic rationality in P-Z that highlights a sense of justifiable equilibrium between investments (risk) and outcome (profit). Taxes and royalties are hardly prioritized due to a general scepticism towards the State and a disbelief in the rewards of paying tax. Illustrative in this regard is the observation

that the mining companies have struggled for four, five years to incorporate their workers in the social security system (*IESS – Instituto Ecuatoriano de Seguridad Social*). For the companies, this is an obligation and a legal requisite to operate. For the workers, this welfare system provides them *and* their immediate family with rights to a number of public goods (including hospital). Still, most miners were very reluctant to be incorporated and mostly requested to be paid the extra 30-50 dollars a month (corresponding to the amount employees must pay to keep their workers in the social security system)[vi].

Another progressive step taken by the Correa administration was the mining mandate of April 2008 (*Mandato Constituyente Minero*[vii]). This reform aimed at withdrawing all contracts of mining explorations that was not complying with national mining legislation (in particular the avoidance of paying patents and/or violating environmental criteria). It also aimed at eradicating the problem of many concessions in the hands of a few people, but importantly excluded the concessions that were under the phase of exploitation. The result was a partial revocation of about 500 mining contracts (Velasquez-Lopez 2010: 41). An additional and important step to avoid straightforward corruption and clientelism, was the exclusion of current and former public functionaries (and their families) within the Ministries of Natural Resources (including energy, oil, and mining) from purchasing any mining concession. The Mining Mandate also gave birth to the national mining company (ENAMI) in an attempt to secure more national autonomy, but given the lack of Ecuadorian experience in the mining ambit, this entity has been obligated to associate with its counterparts in other countries (particularly South-Correa, South Africa and Chile). As Sacher & Acosta (2012: 19; see also Bustamante & Lara (2012: 143)) on the influence of transnational mining companies and Ecuador's cooperation with other governments) point out, this cooperation comes with a cost, namely the interests of these entities to develop mining projects in alliance with mining companies. Likewise, and following the critical analysis of these authors (particularly Acosta who participated in this process as President of the Constituent Assembly), the progressive aim of this reform was largely abolished in the end (Sacher & Acosta 2012: 20). Hence, in January 2009, negotiations were closed and the new Mining Act was signed without mitigating the monopolization of mining concessions and neither without eradicating the concessions held by ex-public employees (ibid.). In other words, despite a strong public opposition, the Correa administration manifested its belief in extractivism and corporate social responsibility as a driving force for the Ecuadorian economy, and accordingly, its growing disbelief in democratic participation.

Nevertheless, the Mining Act of 2009 provides for a substantial improvement in contrast to former legislative frameworks, especially the return of the State as the major player in relation to control and regulation (Sacher & Acosta 2012: 21). And despite its weaknesses, this is currently the major legal guideline, explaining several key principles of Ecuadorian mining politics. While the document contains detailed information about many aspects of mining that does not necessarily involve ASGM, the main principle that guides Ecuadorian mining legislation is that the latter explicitly holds the State as the owner of all subsoil resources on its territory. This opens up for the distinction between holders of a concession and the owners of land, in which the rights of the former to exploit subsoil resources outweigh the property rights of the latter. This is essentially the source to several conflicts caused by extractivism in Ecuador, which are entrenched in a contradiction between the safe-guarding of indigenous ancestral lands as recognized in the Constitution (e.g. Art. 57) and Article 407 that secures the State with the right to override all other considerations if in the ¨nation´s interest¨ to do so (cf. Art. 15 of the Mining Act).

Given the lack of indigenous people in P-Z as a region, this last trait is hardly an issue. Still, the issue of mining concessions vs. property rights is a core problem since most concessions are held by a few hands. The case of ELIPE Ltd. is illustrative, as this company has obtained almost the same number of concessions as SADCO, essentially covering large parts of the cantons of Portovelo and Zaruma[viii]. Thus according to the law, ELIPE Ltd. can rightfully start exploration and exploitation anywhere in these areas as long as it is done according to legal procedures. This means that local landowners have no legal rights to oppose this, although they can call for a prior consent that, in the case of resulting against mining, can equally be overridden by the Ecuadorian State (leaning on Article 407). The problem in P-Z however, is not so much the issue of ELIPE Ltd. expanding their mining activities spatially (currently almost all of their exploitation is done in the *Cabo de Hornos* mine), but rather the fact that they hold the great bulk of concessions in relative perpetuity[ix]. Bluntly put, there are no room for all the artisanal miners who refuse to, or cannot, pay the 15% tributes ELIPE demand as payment for extracting minerals from their concession. Accordingly, the artisanal miners throughout the region of P-Z, albeit with the exception of the ones who have come to an agreement with other concessionaires, work illegally at risk of being sanctioned by ARCOM. This is the legal situation for numerous artisanal miners regardless of the fact that some mine minerals on their own property, a property that may have been in their family long before ELIPE Ltd., nor any existing mining company in the world, was even invented.

A key question in this regard is how ELIPE obtained all these concessions. The Mining Act is rather diffuse on this process, stating that concessions are given ¨through an administrative act¨ (Art. 31), or alternatively that this is done by the Sectorial Ministry through a public auction (Art. 29). However, it clearly states that this is solely the State's domain and that the granting of mining *titles* is under the responsibility of the Sectorial Ministry (Art. 7)[x]. Still, I asked this question several times during fieldwork and immediately got more or less the same answer regardless of whom I asked: ¨well, that's where politics enter the game¨ (*pues eso es politiquería*). Asking people working for ARCOM or INIGEMM (National Institute of Metallurgical and Geological Mining Research), the conversation would stop at this point as if they did not know more about it, or to hint that I should simply accept this. Contrastingly, talking to people without loyalties to the State, the comment of ¨that´s politics¨ was always followed up by accusations of top-level corruption as if *that* was all too obvious. Leaving these accusations aside, the history of ELIPE in P-Z reveals that it purchased both information and concessions through a chain of concessionaires highlighted by the presence of IAMGOLD, a Canadian company well established in Ecuador, who conduced explorations in P-Z between 1998 and 2003. Accordingly, ELIPE state that on top of the 3% royalties paid to the Ecuadorian State, they also pay ¨1.5% of net value to previous concession-owner¨[xi].

The legal complexity and inconsistencies in Ecuadorian mining legislation could be subjected to a thesis of its own where discrepancies between the Constitution and the Mining Act could be related to government ideology, property rights and conflicting ontologies/epistemologies[xii]. Although this may be a useful exercise, it would be increasingly complicated by the fact that the legal documents are altered continuously. Not only is there an immediate archival history that reflects regulatory adjustments within the period of the Correa administration since 2007, but also profound differences between current legislation and previous Constitutions and, for instance the Mining Act of 2000. Furthermore, as I will show regarding the categorization of mining operations, the current Mining Act is severely manipulated according to interests and bias.

Likewise, to complicate matters even more: when I confronted an ARCOM official in P-Z with questions regarding the Mining Act in February 2016, he sent me a version of this document modified in July 2013, saying that this was the latest and most valid version that he and his colleagues followed. It turned out however, that the Mining Act was modified once more in December 2015. Consequently, the ARCOM official and his colleagues were enforcing the previous version. This is not necessarily too dramatic as the documents are very

similar, but it illustrates that the dynamics of the legislation are even too fast for the people who are supposed to enforce it. Accordingly, it is not surprising that miners with (or without) a good will to implement and follow legislation, feel frustrated with all this legal fuzziness and frequently opt to ¨do things the way they have always been done¨. Lastly, just to confirm the frustration among miners, by taking a close look, there are actually two different versions of ¨the latest version¨ of the Mining Act, both claiming to be valid[xiii]. Importantly, they both state that the use of mercury is prohibited in all mining operations (Art. 86), but one of them, in its very end, includes a ¨transitory disposition¨ saying that there is a two-year buffer to implement alternative processing techniques replacing the use of mercury. Moreover, this ¨transitory disposition¨ is actually echoed in the 2013 version of the Mining Act, meaning that by 2015, time should have run out. However, if we take the version from December 2015, that includes the same disposition (referring to different years), to be the valid one, miners are given another two years to replace mercury. This seems to be the case, since ARCOM do not currently sanction the use of mercury although they were on the verge to do so (and despite the fact that they work with the 2013 version!). I return to the controversies of mercury in the following chapter. Meanwhile, the institutional structure of the mining sector, according to the Mining Act (Art. 5), is as follows:

1. The Sectorial Ministry (under which lies The Ministry of Mining that was separated from The Ministry of Non-Renewable Resources (heavily focused on oil) in the beginning of 2015)
2. ARCOM (Agency of Regulation and Control of Mining)
3. INIGEMM (National Institute of Metallurgical and Geological Mining Research)
4. The National Mining Company
5. Local municipalities (only covering their corresponding competencies)

As the focus of this thesis is legislation and its link to mining praxis, my main interest is the role of ARCOM. In the last chapter I include INIGEMM as well. The National Mining Company is, as far as I know, not present in P-Z and will not be analysed here. Likewise, and despite their potential influence (for instance in obtaining and redistributing capital stemming from mining rents), the municipalities of Zaruma and Portovelo are not scrutinized here. That being said, these municipalities have a strategic position, exemplified through the formation of CIMA after the era of SADCO. Additionally, there are many links between local miners/owners (with their respective interests) and bureaucrats working in these municipalities. My general impression is that the municipalities play an important role

protecting the interests of the local mining elite (including APROPLASMIN – Association of Owners of Processing Plants) and that they do a poor job obtaining funds that can be directed to public spending, i.e. improvements in infrastructure.

Regarding the link between mining legislation and the mining sector, ARCOM is by far, the most important public institution. It is present throughout all mining contexts of the country, with a strategic headquarter in Zamora (capital of the province bearing the same name), which is home to the most aggressive expansion of large-scale mining projects in Ecuador. As the operational extension of the Mining Act, ARCOM is, as acknowledged by one of their officials during an interview, ¨the mining police¨. Chapter three is dedicated to the examination of ARCOM's work in its context. For now, I continue to comment on the categorization of mining operations in P-Z.

Categorizing ASGM

According to the Ecuadorian Mining Act of 2009[xiv] there are only two categories of metal mining at work in P-Z, namely small-scale and artisanal mining. However, there are two companies who, by far, exceed the rest, both in terms of infrastructure and volume of production. These two companies, BIRA S.A. and ELIPE Ltd., only maintain themselves in the category of small-scale mining due to a favorable interpretation of the Mining Act. Hence, I have included the category of ¨medium mining¨ because I consider this to be the correct interpretation (reflecting the difference between these two companies and the rest) and to illustrate how large companies achieve un-just advantages. In the following I present the main characteristics of these three categories:

1) Medium mining operations. According to the Mining Act (Art.133: Titulo…Cap. 1), the production volume in this category must range between 301 and 1000 tons of material per day in the case of subterranean mines[xv]. The two largest companies - BIRA S.A. and ELIPE. – have a capacity to produce even more than this. Both companies have obtained concessions in order to explore, exploit and process minerals. BIRA S.A. is an Ecuadorian family owned company (currently based in Guayaquil) operating in Zaruma since the beginning of the 1980s. It is worth mentioning that this company has obtained considerable local integrity in P-Z, especially in contrast to ELIPE, and that they have achieved this by engaging in local projects of reforestation and education along with a sustained focus on mitigating their

environmental impact. ELIPE, as mentioned above, is a Canadian subsidiary[xvi] that has obtained the great bulk of concessions in the P-Z region. Additionally, it has exploration concessions and large-scale prospects in the provinces of Loja and Zamora. ELIPE has a plant capacity to process 2400 tons of ore a day and the largest single mine (*Cabo de Hornos*) in P-Z[xvii].

According to Art. 93 and Art.133: Titulo, Capitulo 1, the concessionaries in this category are obliged to pay 4% royalties on mineral sale, income tax, added value tax, and on utilities: 5% to the workers and 10% to the State. Additionally, they must also pay annual patents in relation to the size of their concessions and the state in which it finds itself, i.e. exploration-exploitation (Art.34).

2) Small-scale mining operations. This category is home to numerous small companies and cooperatives in P-Z. The criterion set by the Mining Act is that their capacity to exploit and/or process ore material must not surpass 300 tons a day (Art. 138). They are obliged to pay 3% royalty on the sale of minerals. As with medium mining operators, small-scale miners are also obliged to pay patents, albeit according to a different scheme, in order to maintain their concessions (Art.34). These companies are also taxed on income, utilities and added value, but no windfall tax[xviii].

   The companies and cooperatives are diverse in terms of their composition, but many represent a combination of local footholds and external capital (either from within or outside Ecuador). Likewise, there is diversity in terms of their organization regarding concessions – some have obtained concessions for exploration/exploitation/processing, while others rely on formal agreements (contracts) with the concessionaire. Alternatively, they operate on multiparty concessions with other companies or, more controversially but equally true: they operate illegally on the concession of a third party.

3) Artisanal mining. The difference from small-scale mining, according to the Presidential decree 120 signed in Zaruma in November 2009 (Special Regulation Rules for Artisanal and Small Scale Mining), is that this category consists of individuals, families or cooperatives that mine only for subsistence with manual equipment (Delgado 2009). Furthermore and according to the Mining Act, artisanal miners cannot associate with foreign companies or rely on foreign capital (Art. 29). They are not obliged to pay neither royalties nor patents (Art. 134) and can pay their

income tax through a simplified tributary regime (Art.148). They can be formalized as legal, artisanal miners with mining titles and set up a mining contract with the concessionaire (Art. 18). Alternatively, they work illegally on the concession of a third party, either as landowners or by ¨making a deal¨ with the landowner, and/or without paying tributes to the concessionaire[xix]. Importantly however, a specific feature of the special regulations on artisanal miners is that, with the exception of alluvial miners, they are not allowed to process their ore themselves, but obligated to do this in certified processing plants (cf. Art 134).

This is roughly the categories of mining operations in P-Z without entering into details and idiosyncrasies. A general observation is that there is a continuum of decreasing control over the mining cycle (prospection-exploration-exploitation-processing-smelting-refinement-mineral sale-closure of mining operation) with ELIPE Ltd. and BIRA S.A. in one end, and artisanal informal miners on the other (and the rest scattered along the continuum). While the former control the entire mining cycle only limited by gold price fluctuation and the government's (absence of) regulatory measures, the latter only extract small quantities of mineral ore and are totally dependent on third parties to convert this into monetary values. In practice, this procedure consists in artisanal miners delivering a small quantity of high-density ore that is normally processed in small ball mills (¨chanchas¨) through the use of mercury amalgamation. As part of payment for this process, artisanal miners leave their tailings, which are then subjected to another round of processing (normally involving cyanidation) where the rest of the gold and silver is separated and refined. This hierarchy gives a special flavor to the ASGM in P-Z as it uncovers an exploitative business model between the owners of the processing plants and artisanal miners. In fact, this model is somehow perversely innovative in the sense that the processing plants who do the worst amalgamation job for the artisanal miners are also the ones making most money since they extract more gold in the second round of processing (cf. Miserendino et al. 2013: 714). Two additional aspects related to this categorization should be mentioned.

First of all, the ¨favorable interpretation¨ of the Mining Act that enables the two largest companies to be categorized *de jure* as small-scale miners, needs an explanation. In the case of ELIPE, the company simply avoids being categorized as medium-scale (or large scale) by reporting the extraction of less than 300 tons of ore per day *per concession*. Currently, the company extracts minerals from five concessions in P-Z. Despite the fact that almost all of this ore comes from one single mine (with a descent and tunnel system that extends into

several concessions) which is subsequently aggregated in one large processing plant, they maintain themselves as a small-scale mining operation because of this convenient interpretation of the Mining Act. Accordingly, ELIPE pays the same royalty and tax rates as a mining company pulling out, say, twenty tons a day[xx]. According to themselves, ELIPE has produced more than 70 000 ounces of gold since 2013, which is equivalent to almost two tons of gold, which again amounts to approximately 70 million dollars given a current gold price of 35 dollars a gram[xxi]. The sheer scale of this production, along with the fact that ELIPE holds the vast majority of mining concessions in and around P-Z, is apprehended as a governmental bias, i.e. as a governmental preference for large companies, by local miners. This creates friction both internally to the sector and resentment towards the State in its various representations (government, parliament, provincial administration, regulating authorities etc.). Furthermore, as a general point also applicable to BIRA S.A., these companies deliver their trimestral reports carefully fulfilling all legal criteria, but are never scrutinized any further. Due to the lack of capacity and/or unwillingness on behalf of ARCOM, to monitor the relationship between the volume of production from each concession, these companies can practically report whatever they feel convenient.

Second, manipulation of information is not restricted to the largest companies, but is very much the operating norm for all companies and operations. Although it may be conceived as an important improvement that the companies report anything at all, and although there are different degrees of honesty at play among the companies/cooperatives, in a realistic and practical frame the categorization of the ASGM sector is, at best, a guideline for how companies should report and behave publically.

The notorious difference between mining legislation and mining praxis is something everyone involved in mining matters in P-Z are very much aware of. To an outsider or anyone apprehended as a potential critic (including ARCOM or other authorities), the discrepancy between legislation and praxis takes the shape of a taboo where mining administrators expect workers/miners to speak rhetorically along the lines of the law. For instance, I repeatedly asked miners in the mines how long they worked during a day. I never got an immediate and straight answer to this, but always answers beginning with ¨well, it depends…¨. In the end however, the best answer I got came from a miner that, after some hesitation, finally said that he worked the amount of time allowed in the Law (*lo que dice la Ley*) without saying (or knowing) how much this is. Evidently, he said this out of fear that he would reveal the fact that he worked too much. Yet in fact, Art. 19 in Security and Health Regulations for the Mining Ambit, is not concrete on this and merely state that employers are obligated to secure

a responsible well-being of the employees.

Likewise, in relation to Article 68 in the Mining Act that emphasizes employers' obligation to provide for a secure and hygienic working environment for the employees, this is mostly done by putting up signs and internal instructions on the walls, and providing for helmets and reflexive vests. In praxis, the workers of the mines face numerous risks (extreme heat and humidity in deeper levels, gas and dust exposure, poor ventilation and poor, if any, communication possibilities with colleagues outside the mine) even in the most developed mines. In more rudimentary mines, the conditions are increasingly dangerous due to a notorious lack of investments in security measures. People die regularly because of cave-ins. In the processing plants on the other hand, the immediate dangers are less, but leveled by a continuous exposure to chemicals (especially the ubiquitous smell of cyanide and the occasional mercury vapor), dust and noise. Additionally, in several smaller processing plants I witnessed how tiny, shared bedrooms designated for the workers, were placed right beside the mills operating 24/7 – providing for a dubious atmosphere to rest after a hard day's work.

Simply put, there are numerous environmental and security concerns that fail to comply with Ecuadorian mining legislation, in fact there seems to be few installations that would pass through a prolonged and detailed inspection. This was clearly put by an experienced ARCOM official during an interview in which he underlined that: ¨if we (ARCOM) were to apply a strict interpretation of the Mining Act, we would simply have to shut down all mining operations. That is undoubtedly a fact¨[7]. Curiously however, ¨everyone¨ seemed to agree that, compared to an undefined past, there has been improvements regarding waste management and working conditions. Before I explore this contradiction any further, it is necessary to have a closer look at the processing plants situated in the infamous Pache and El Salado further downstream in the Puyango River. As I have suggested, the position and workings of these processing plants is a key to understand internal power relations, which again serves to build an argument explaining *why* (not merely affirming that ASGM pollutes heavily here as elsewhere) unsustainable mining praxis prevails in P-Z.

The processing plants

As mentioned, during the 1990s a number of processing plants (currently 87) were established along the Calera, Amarillo and Puyango River. Today, these plants process ore not only from

[7] *Si hubiéramos implementado la Ley según una interpretación estricta, hubiéramos tenido que cerrar todas las operaciones aquí. Eso si es un hecho.*

P-Z, but also from other ASGM districts like Ponze Enriquez/Bella Rica, Nambija and even Northern Peru. The establishment of the processing plants facilitated a much larger throughput of ore, but also increased contamination. This contamination is essentially due to the discharge of tailings and waste containing mercury and sodium cyanide, lead, arsenic and other heavy metals/chemicals into the rivers. To be specific, estimates from 2011 suggest that the total amount of tailings and mining waste dumped into the Puyango River was about 880 000 tons annually containing approximately 650 kilos of mercury and 6000 tons of cyanide (Veiga et al 2014: 541). As this river eventually flows into Peru before it reaches the Pacific Ocean, this has created a geo-political tension between the two countries (Nichols et al 2015). There are rumors of large lawsuits, but on closer inspection (talking to authorities), the problem is so far treated in diplomatic terms. What is clear, however, is that there is an increased pressure on the Ecuadorian government to take action on river contamination.

When the processing plants were established they were located and designed to release tailings into the river. Today, as we can recall from the opening story of this thesis, this practice is considered as an act of environmental crime according to current legislation (cf. Art. 81 and 86 of the Mining Act). In fact, all processing plants are obliged to either create their own tailings pond in accordance with environmental standards issued by the Ministry of Environment, and/or deliver their tailings by trucks at the communal tailings pond located 15 minutes from Portovelo. Faced with the increased attention on mercury mitigation, especially after Ecuador signed the Minamata Convention[xxii] in 2013, the processing plants have, at least officially, opted for cyanidation and in some cases flotation to process the ore. In the following, I briefly outline these processes as to give the reader an idea of the technical features involved. Admittedly, there are several publications that give much more detailed and elaborate descriptions of these processes and their consequences (see for instance Seccatore et al 2014; Veiga et al 2014; Miserendino et al 2013; González-Carrasco et al 2011).

All processing plants have some kind of mills (most commonly ¨Chilean¨ mills) to grind the ore that miners deliver by truck. The ore is mixed with water in these mills and the conventional technique is to pass the milled ore through sluice boxes containing woollen blankets that captures the minerals. The blankets are ¨washed¨ in a recipient and the minerals are henceforth concentrated and accumulated. This primary technique captures between 40 and 50% of the gold in the original material (Veiga et al 2014: 541). A fast, yet inefficient technique, is then to pan this concentrate with the use of mercury, to obtain an amalgam consisting of gold and mercury (and potentially other minerals as well). In order to withdraw the mercury from this amalgam, it is burned at high temperature (ideally in a retort), which

causes the mercury to evaporate into the air. In the end, the miners who deliver the material that pass through this process, is left with a small ball of gold (with varying degrees of purity) which amounts to about 30% of the gold content in the original material (ibid.). This technique is essentially the same as observed by Fray Vásquez de Espinoza in the beginning of the 17th century (cf. chapter 1). Indeed, it is inefficient, but it is fast and do not require very much investment. And regardless of scientific analyses emphasizing its inefficiency, it is importantly, ¨the way it has always been done ¨, and a constituent praxis in the habitus of informal mining (cf. chapter 4).

Another widespread, more recent, technique to process ore with the use of mercury is through an amalgamation process in small ball mills (¨chanchas¨). Here, mercury is introduced in the mill with the ore and the water and thus the panning is avoided. This is a faster way to amalgamate (especially coarse gold from small amounts of high-grade ore), but ¨more mercury is pulverized and lost with the tailings during the grinding¨ (ibid.). Similarly, the amalgam is subsequently burned to remove the mercury and the artisanal miners are likewise left with a small ball of gold. This process (amalgamation through the use of small ball mills) has proliferated in the processing plants and highlights the exploitative business model as referred to above. As mentioned, it also causes more mercury release than the traditional technique (gravitation/sluice box/woollen carpets/panning). However, this praxis seems to be decreasing with the pressure to eradicate the use of mercury and, for larger operators, upon noticing its inefficiency.

The next step for the artisanal miners, who often do this on a weekly or monthly basis, is to sell their little ball of impure gold to a buyer (who buys according to the international price with a penalty depending on purity, quantity and the art of bargain). These buyers are often either local miners/processing plant owners or merchants purchasing these small balls of gold for a low price, accumulating for some time, and then finally smelting and refining the gold before selling it to gold traders. These gold traders comprise another, highly controversial level of analysis if we were to follow the entire chain here[xxiii]. Here, it suffices to say that local praxis of gold trade does not discriminate between gold traders with or without a certificate to legally trade in gold, neither regarding the destiny of the gold or the origin of the money. The important thing, seen from the perspective of the local traders, is to get a good deal without taking too much risk.

Cyanidation, i.e. the leaching of mineral ore with use of agitated cyanidation tanks, is currently the most conventional way to process ore in P-Z. Both ELIPE Ltd. and BIRA S.A apply this method in combination with gravity concentration, and so do the vast majority of

processing plants (including their predecessors SADCO and CIMA). BIRA is additionally building a flotation pool in order to process old tailings and separate more minerals (particularly copper) and also concentrate fine gold that escapes the cyanidation process. Anyhow, cyanidation is applied to both gravity-concentrated ore and mercury contaminated tailings left by the artisanal miners as part of the payment for the service. This concentrate is either leached with cyanide in carbon-in-pulp or through the Merrill Crowe process (Velsaquez–Lopez et al 2011: 1127-29). This last process involves adding lime to the cyanide solution (to obtain a ph level above 10), and 12 hours' agitation cycles repeated about three times. Omitting some of the technicalities here, cyanide basically dissolve the ore and the minerals. Gold and silver particles are then captured with the use of zinc shavings (hence, the success of cyanidation in general is largely dependent upon an optimal grinding that expose gold particles, i.e. gold that is hidden in larger host particles will not be recovered). This process is repeated until there are no visible traces of gold/silver in the zinc shavings. At this point the cyanide solution (no longer containing gold that this system is able to capture) is discharged into the river (or ideally into a tailings pond). Figure 1 illustrate this process.

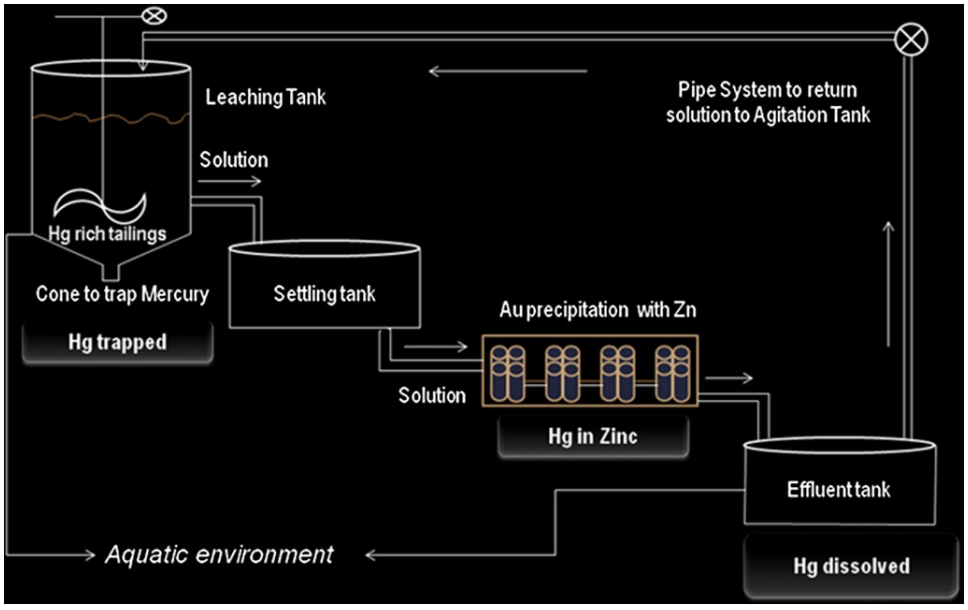

Figure 1 (retrieved from: Velasquez-Lopez et al 2011) describing the Merrill Crowe process. Hg is mercury, Au is gold, Zn is Zinc.

The former process is preferred by many miners that rent this service because it is cheaper and faster than the Carbon-In-Pulp process. Still, the latter is gaining grounds in correlation with a decrease in amalgamation and the use of small ball mills. Carbon-In-Pulp process

essentially means that activated carbon is added to the cyanide solution after about 12 hours of leaching. These carbon particles capture the gold particles and are subsequently isolated and subjected to a 72 hours' treatment in a hot solution containing ethanol among other chemicals. This solution is sent to an ¨electrowinning process, depositing gold onto cathodes¨ (Velasquez-Lopez et al 2011: 1128). Lastly, the cathodes are subjected to elution and/or electrolysis, i.e. the process of separating minerals from each other (essentially gold and silver).

While there are advantages in using Carbon-In-Pulp over the Merrill-Crowe process (cf. Veiga et al 2009: 1379), the latter is much more efficient to extract mercury, in the cases where the cyanide solution is contaminated with mercury (Veiga et al 2014: 542). However, the advantage of mercury capture in the zinc shavings (Merrill Crowe) is not taken into account as miners burn the zinc shavings to obtain the gold, thus causing mercury to evaporate into the air (543). Figure 2 portrays the different processes:

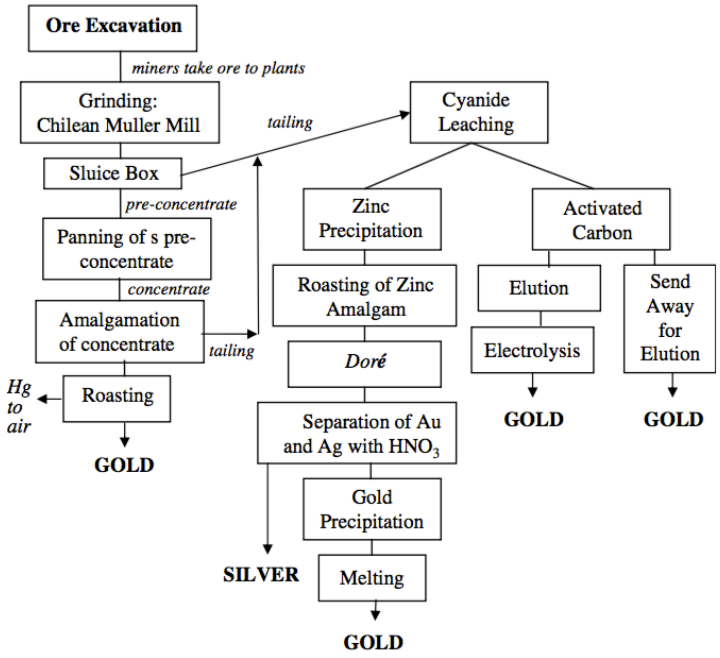

Figure 2 (retrieved from: Veiga et al 2009) illustrating different processing techniques. Hg is mercury.

The main advantage of using cyanidation instead of mercury amalgamation is that miners capture much more of the gold (and silver) content in the ore, and if cyanide and other chemicals are handled carefully, it is also a cleaner process (Velasquez-Lopez et al 2011: 1131)[xxiv]. If cyanide is not handled carefully, which is largely the case in P-Z (cf. Veiga et al 2014: 542), the only advantage of its implementation is the improved ability to capture more

gold. Moreover, as cyanide solution containing mercury is discharged into the river, these substances form mercury-cyanide complexes that increase mercury mobility in water (ibid.: 543; for a nuancing of this problem see Guimaraes et al 2011).

The last innovation regarding processing techniques in P-Z is flotation. Flotation essentially consists in milled ore being discharged into a pool where chemicals are applied to recover mineral particles (Hinton et al 2003: 104). This technique has been established in 40 processing plants with a daily capacity to process between 30 and 100 tons and has the advantage of recovering copper that escapes both mercury amalgamation and cyanidation (Veiga et al 2014: 542). Additionally, the operators avoid using both cyanide and mercury and are also able to capture finer grains of gold that escapes the other techniques. The outcome of flotation is a mineral concentrate that must subsequently be smelted and refined in order to separate the minerals. However, based on metallurgic analyses of the degree of different mineral contents, these concentrates are sold directly to large smelters in Peru and China where this last process is accomplished (ibid.). Although this essentially means to move some of the contamination elsewhere, flotation has a potential to mitigate the local environmental impact of gold processing (cf. BIRA is also currently advancing this technique).

There are additional alternative techniques to the ones described above, especially systems involving gravity concentration and centrifuges (Hinton et al 2003:104-5), which are implemented in a few modern processing plants in P-Z. However, the main obstacle to these, and flotation, is high implementation costs. And along with high implementation costs; the fact that all of these techniques are more time consuming than mercury amalgamation. This is a problem for relatively poor and impatient artisanal miners that rely on immediate economic feedbacks from the hard work invested in the mines. Thus, I largely agree with Veiga et al concluding that:

> The labour division between ¨rich¨ processing centres' owners and ¨poor¨ miners introduces a huge hurdle for the evolution of the cleaner technologies and for equitable division of gold production. This is, in fact, creating more pollution. (…) They (*artisanal miners*) become trapped in the scheme of the processing centres and accept less than 30% of the gold extracted from their ores. (2014:543, my emphasis in italics)

These authors suggest that the main solution to this development is education and training of the mining sector, and consider P-Z as one of many ¨examples of good progress¨[xxv] by comparing it to ASGM in Peru and Colombia (ibid.). I cannot tell if this is an obligatory statement due to their own ¨progressive¨ involvement in P-Z or if it stems from relativizing success with failures elsewhere, but I find it curious that they ignore their own observation of

an evident power asymmetry when it comes to suggestions for the future. Put differently, how far will education and training resolve this exploitative mining regime? Why such an avoidance to confront the problem of power relations and social injustice?

The ¨success¨ of P-Z, they say, is due to 1) strong investments from the private sector, 2) international training co-operation efforts, 3) active participation of miners in decision-making, 4) more presence of the government in mining sites and 5) involvement of good local technical people (ibid.). First of all, one could certainly be critical to what kind of success they are talking about here, especially considering recent media reports featuring an increase in contamination and severe health consequences[xxvi]. Secondly, one can critically ask how many artisanal miners are among the ¨active participating miners in decision-making¨, and be suspicious that these are in fact the most powerful miners (and/or processing plant owners). Third and related to the second, these authors portray the problem basically as a technical question, i.e. how to become more efficient and lower pollution rates. I consider this conclusion highly problematic because it avoids addressing the power relations and politics behind the governance of ASGM in P-Z. Furthermore, these authors are fundamentally enthusiastic that gold mining ¨…provides jobs for a large contingent of local people and sustains other social activities in the community¨ (ibid.), an attitude that echoes the rationality inherent to extractive industries (this is also echoed in Nichols et al 2015 and Miserendino et al 2013). As touched upon in the introduction, and as I shall continue to suggest in the next chapters, this is a key aspect to the problem because it represents a hegemonic world-view that obscures alternative visions of future development.

More generally, while it is easy to sit back and critically examine the way processing plants should improve their praxis, many administrators and workers of these plants consider the move from mercury to cyanidation as a substantial improvement and talk of the latter as the sustainable path towards the future. In huge contrast to a person considering these substances from an outside perspective (especially people with environmentalist sympathies), for miners in P-Z cyanide and mercury are conceived as useful and positive substances. Empty barrels of cyanide are even used as trash cans throughout the urban areas of Zaruma and Portovelo. Not only do mercury and cyanide facilitate the recovery of gold that is otherwise hidden inside rock material. In P-Z they are per excellence the main ingredients in transforming nature into a commodity.

Before I turn to examine the workings of ARCOM and the way mining legislation is enforced, I am going to finish off this chapter with some consideration on the economic value generated by the ASGM sector in P-Z. I have touched upon this in the passing, but in the

following I outline the major features and tendencies related to the value of gold.

Is it worth it?

The ASGM sector in P-Z is the centrifugal mining centre for scattered mining activities in the highlands of the province of EL Oro (*la parte alta*), which includes the cantons of Piñas, Atahualpa, Chilla and the eastern parts of Santa Rosa and Pasaje. Not only gold but other minerals (silver, copper, zinc, cadmium, lead) are extracted along with material for cement and construction (i.e. non-metal mining). Given this dispersed mining population, it is hard to accurately delimit how many people are involved in ASGM in P-Z. Accordingly, estimates on people directly employed in mining varies between 6000 (Miserendino et al 2013: 713) and 10 000 (Veiga et al 2014: 541). These numbers also depend on where one draws the line between mining activity and its related services (i.e. the boundary between direct and indirect links to mining). At any rate, most people acknowledge that ASGM is the economic engine to the whole region (the highlands of El Oro) with long arms into other sectors on a provincial level (in particular banana and shrimp industries), investments on a national level (mining companies with footholds and interests in other parts of Ecuador), and capital flow into international corporate hands (epitomized by ELIPE/Dynasty Metals).

Estimates on total annual gold production in P-Z have somehow settled on approximately 9 tons (Nichols et al 2015; Veiga et al 2014; Miserendino et al 2013). This estimate is based upon the assessment of APROPLASMIN (cf. Veiga et al 2014: 541), which is the local Association of Processing Plant Owners. This association may have done this in good faith, but there is no description of their methodology anywhere (at least to my knowledge). Furthermore, what is relevant here is that APROPLASMIN represent strong interests to underreport on extracted quantity to avoid pressure of fiscal payments. Contrastingly, Astudillo (2007) estimated annual gold production to be between 10 and 15 tons already ten years ago[xxvii]. I am being rather meticulous about these numbers because they certainly matter. In fact, if we think of regulation of the mining sector excluding national legislation, politics and its enforcement, it is clear that the major variable dictating the intensity of the ASGM sector is, along with input prices, the international gold price. Figure 3 gives us an idea of the variations of gold prices.

Figur 3 (retrieved from: http://goldprice.org/) illustrating the fluctuation in gold price during the last 40 years. See particularly the peak in 1979, which in essence marked the start of ASGM in P-Z as we know it today.

What needs to be taken into account here is the general process of inflation in parallel to fluctuations in gold price and the fact that Ecuador switched currency from sucres to US dollars after the financial crisis of 1999-2000. Hence, the peak in gold price during the last years must be considered in the light of increased living expenditures which were considerably less before the turn of the millennium. Nevertheless, the peak in mid-2011, when a gram of gold was valued at 60 dollars, crystalized a major momentum for the miners in P-Z. With this value, even low-grade ore was being processed and the local economy flourished. As mentioned above, during fieldwork for this thesis, the gold price was stable around 35 dollars (recently increasing to 40), and there were widespread complaints on ¨low gold price¨ (*esta bajo*) among miners. Although this ¨culture of complaints¨ is a cultural trademark among the miners (always emphasizing challenges/difficulties instead of profitable aspects), they conceived this ¨low price¨ in relation to increased input prices and increased transaction costs in order to comply with the increase in governmental regulations. More controversially, some miners even complained that there was a significant increase in the actual amount of money sufficient to bribe governmental authorities (ARCOM) when these threatened to sanction or close operations. According to miners and the service sector indirectly dependent on mining, the sector as a whole was currently passing through a crisis due to these circumstances.

The controversy and the relativity of the above-mentioned could be discussed at length. Yet instead I wish to examine the recent development of fiscal tributes from the

mining activity, as to suggest how much economic value is actually left in P-Z compared with how much economic value that is generated. First of all, as I remarked upon in the beginning of this chapter, the mining cooperatives/companies are obliged to pay patents on mining concessions, royalties on total revenues and several taxes on top of these. Artisanal miners are excluded from all these with the exception of income tax (that is in practice, never paid). Still, although neither artisanal nor small-scale miners pay much tax, many spend their money locally and thus pay aggregated value (*IVA*) on the products they buy. Secondly, according to Article 93 in the Mining Act, 60% of the amount of paid royalties is to be directed to the localities from which the resources were extracted. Some of this money is channeled towards the local municipalities, some of it to the provincial level (*Gobierno Provincial*). Yet, this mechanism is increasingly accomplished by pooling tax and royalties in a central institution (Ecuador Estrategico) that finance public spending on project basis. Hence, in order to take advantage of Ecuador Estrategico, local or provincial initiatives must develop projects and apply for finance from this institution. One example of this was the financing of the communal tailings pond in El Tablón, a fifteen-minute drive from Portovelo.

In the following I present the fiscal tributary development during the last six years. I have chosen to include the canton of Machala in addition to Zaruma and Portovelo as a point of reference and to illustrate that fiscal income do not necessarily follow the location of resource exploitation (there is little, if any, mining in Machala). Rather, this income seems to be channeled into the canton where the company is registered. This is of course, a matter of increasing concern regarding larger and foreign companies (cf. Panama Papers)[xxviii]. Both tables are elaborated by the use of statistics presented by the Ecuadorian tax service (*SRI*) and all numbers are in US dollars.[xxix]

Canton/Year	2010	2011	2012	2013	2014	2015
Zaruma	1 472 466	2 351 838	3 792 109	4 128 998	3 703 423	6 577 889
Portovelo	737 065	963 749	1 989 945	5 315 100	8 109 583	6 845 909
Machala	54 758 664	67 720 101	83 601 387	92 592 221	115 382 291	127 141 573

Table 1 showing all fiscal income (not restricted to mining).

Canton/Year	2010	2011	2012	2013	2014	2015
Zaruma	192 762	314 367	442 231	617 834	391 567	728 979
Portovelo	50 735	83 978	201 312	769 089	1 764 291	1 229 969
Machala	1 134 542	1 735 840	2 503 546	3 230 476	3 356 989	3 393 762

Table 2 showing fiscal income from mining royalties.

Several aspects can be commented upon here, but I will limit myself to two main observations. Importantly however, the Ecuadorian tax scheme has been relatively stable during these six years and the same royalty rate has prevailed. First, let us be moderate and for the sake of simplicity say that the ASGM in P-Z produces 10 tons of gold annually and set the gold price at 35 dollars a gram (echoing the lowest point during this whole period). Additionally, I leave silver, copper and mineral concentrates out of the equation although this also comprises a substantial income. Then we do the math: 1 kg of gold equals 35 000 dollars, 1 metric ton equals 35 000 000 dollars and 10 tons equals 350 000 000 dollars. 3% (royalty rate) of 350 million dollars is 10,5 million dollars. As table 2 indicates, there has been a steady increase in fiscal royalty income, but at best (in 2014 and 2015), the three cantons taken together generated about five million dollars. Second, if we compare these numbers to the unparalleled and historical peak in gold prices from 2010 to 2013, royalty income is stunningly low. Consider for instance the combined fiscal income of Zaruma and Portovelo during 2011, when gold prices reached 60 dollars a gram. If we are moderate (again) and set the gold price for 2011 at 50 dollars and similarly assume that 10 tons of gold was extracted, P-Z generated half a *billion* dollars this year. The total and combined (Zaruma and Portovelo) fiscal income was approximately 2,4 million dollars (not restricted to mining taxes), while fiscal income from mining royalties in Portovelo was about 84 thousand dollars, and 314 thousand dollars in Zaruma.

This essentially leaves us with one big question: where does all the money go? I am afraid I have no good answer to this. My point is rather that the money ends up anywhere but in P-Z (for a similar, yet more general observation, see: Sacher & Acosta 2012: 57-9). It may be the case that fiscal income from royalties flow into the cantons where the mining company is registered and/or has its headquarter. The question would then be if tax authorities in these other cantons manage to distinguish royalties stemming from mining activity in P-Z from other royalties (or other fiscal income), which would be a requisite to secure that 60% of this income is redirected to P-Z. I have repeatedly and insistently tried to get authorities and miners to comment upon this question without luck. Nevertheless, the correlation between

income from royalties and fluctuations in the international gold price is highly inconsistent (royalties slightly increasing while gold prices significantly decreasing). Besides this, royalties, as much as total fiscal income, are very low compared to the economic values that are generated. In sum, this indicates that the ASGM sector in P-Z largely operates outside the national tax system with unknown commodity chains and unknown capital flows.

In this regard it would be legitimate to ask: What are the local municipalities and provincial administrations up to here? And why is there an absolute silence from local people in the face of this skewed distribution? However, as the previous chapter indicated, this is rather the general characteristic of wealth distribution generated by mining activity in P-Z. In other words, while mining has and continues to sustain the livelihood of the local population, all major profit has flowed into other places: first to centralized Incan authorities, then to the Spanish crown, then to the Vanderbilt corporation (during SADCO's hegemony), then to a handful of stakeholders in CIMA (eventually leading to its bankruptcy) and lately, in more disperse ways, into the hands of the largest contemporary companies (ELIPE and BIRA) and the segment of processing plant proprietors.

Instead of merely conceiving this as something unjust or unusual, this observation rather resembles the conventional story of the extractive context and echoes the concept of *resource curse.*[xxx] Thus, when I ask if it is worth it, I essentially question the rationality of extractive industries with a critical perspective on the distribution of wealth, which is utterly accentuated if we acknowledge the enormous externalities that are generated by ASGM in P-Z along with the fact that the industry have done little, if anything, to remediate its ecological impact.

Concluding remarks

This chapter has been presented in order to provide for an analysis and description of the most central features of the contemporary ASGM in P-Z. I have contextualized the mining operations within Ecuadorian mining legislation, remarked upon several weaknesses in the latter and problematized the discrepancy between law and praxis. An underlying argument is that legislation, which I have characterized as highly problematic and highly dynamic per se, is somehow irrelevant given its minimal influence on mining praxis. Rather as the last section illustrates, economic premises and praxis is the heart of the self-regulating mechanisms in the sector and this corresponds to the regulating structures throughout the long history of mining in P-Z. Mining generates local jobs, sustains the local economy and generates investments

into other sectors. Still, there is considerable surplus being directed elsewhere, that is, into corporate hands and illegal commodity chains.

By scrutinizing the processing techniques to capture and refine minerals, it has been possible to discern some of the contaminating consequences of the mining activity. In particular, mercury and more recently, cyanide are locally conceived as benign substances that essentially transform nature into a commodity that can be sold in the markets. Externalities, i.e. ecological consequences with very real and high costs in an environmental economic perspective, have never been taken into account by the mining sector, and only recently during the last 15-20 years (due to research and increased governmental concern) been addressed. A central argument however, is that much of the research that has identified contamination and malignant health consequences has failed to address the political reasons behind this praxis. This apolitical research, which is highly influential on government politics, has increasingly identified mining praxis as a technical problem while sustaining the logic of exctractivism as fundamentally positive for local development (i.e. something that can be improved with more efficient techniques). This chapter has critically questioned this assumption and provided evidence to the fact that profit from mining in P-Z mainly covers local subsistence needs, while the ¨big money¨ ends up elsewhere. Not only can this be related to current exploitation; it represents a clear trend throughout six centuries of mining history.

Accordingly, and given these observations, the current process of interlegality in P-Z is characterized by non-compliance with national mining legislation that struggles to harmonize itself with high environmental ambitions in the Ecuadorian Constitution and the government's commitment to a neo-extractive model. There is no opposition to mining in P-Z and the aim of this government, as its predecessors, is merely to increase fiscal income, while, at least rhetorically, mitigate environmental consequences. In the next chapter I will describe and analyze the enforcement of mining legislation. Here on the other hand, I have shown that this mining policy reflects a governmental preference for the largest actors, presumably generating more direct fiscal income and less contamination, and accordingly an accentuation of the marginal position of local, artisanal miners. This creates two important effects. First, a general and widespread resentment towards the State, which contributes to undermine any progressive article (emphasizing the importance of the environment and/or security) in national mining legislation. Secondly, it creates a lock-in for numerous artisanal miners who are dependent on processing plants to benefit anything at all on their mineral exploitation. Processing plant owners take advantage of this situation and consolidate their power both in relation to artisanal miners and the Ecuadorian State – the former by means of economic

exploitation and the latter by means of drawing on local integrity/autonomy in opposition to government regulation and control. As we shall see in chapter four, this last trait includes the ability of the local mining elite to mobilize large strata of the local population to demonstrate against any State intervention.

Thus, in contrast to the existent research emphasizing the complexity of contamination and human health consequences due to ASGM, I have argued that this is just one component in a larger complexity that involves a problematic mining legislation, a continuance of governmental marginalization of artisanal miners, problematic internal power relations, a formal economy that leaves practically no profit for public spending in P-Z and the existence of a vast illegal economy. Without presenting any hard evidence on this last dimension, according to the absence of local wealth and several testimonies indicating illegal trade of capital, minerals and inputs across the Peruvian border, there are strong reasons to suggest that the network (mafia) controlling this parallel economy, in practice regulates the sector much more than the government authorities (ARCOM) that are supposed to do this. Unfortunately, and symptomatic perhaps, I do not have much empirical material as to illustrate and sustain this. Instead, in the next chapter I turn to examine the role of ARCOM in their field encounters with miners and workers of the sector.

Notes

[i] Particularly the case of Nambija illustrates this where thousands of fortune seekers arrived to mine for gold during the 1980s and 90s. A large landslide in 1993, essentially a collapse of the mountain where both mines and dwellings were situated, caused a human tragedy with the death of approximately 200 people. The number of fatalities varies in different sources. Here I rely on a recent newspaper article: http://elpais.com/elpais/2016/01/11/planeta_futuro/1452516408_109500.html

[ii] In 2003, TVX Gold Inc. was taken over by Kinross Gold Corporation (www.kinross.com). These are truly the prototypes of corporations engaged in the exploitation of precious metals (and human labor) throughout the world.

[iii] For an account on IAMGOLD's operations and the concept of corporate social responsibility in Azuay province (Ecuador) see Velasquez (2012). For a brief explanation of the motives for local resistance see Latorre Tomás (2015: 22). For an example of IAMGOLD in Surinam see De Theije et al (2014).

[iv] These can be retrieved online from: http://www.controlminero.gob.ec/?page_id=525

[v] Not only have President Correa reiterated his belief in mining as one of the most crucial sectors for Ecuador, but emphasized that any opposition to this is ¨infantile and ignorant¨. Interestingly he says that Ecuador has to take advantage of ¨its last gram of gold¨. For a three-minute video of this see: Enlace Ciudadano numero 422, 2nd of May 2015: https://www.youtube.com/watch?v=mD90CKx_MbM

[vi] There is a political debate on this system because, in practice, citizens of Ecuador have rights to school and medical treatment regardless of their membership in IESS. Still, the rights are expanded with this membership, especially relevant regarding pensions and prolonged/complicated medical treatment.

However, the implementation of this welfare system has largely been a success for all the informal workers in Ecuador that previously had very few rights.

[vii] For an explanation and download see: http://www.accionecologica.org/mineria/acciones-legales/1178-mandato-costituyente-minero

[viii] A useful tool to see updated and digital maps of concessions in P-Z, or anywhere in Ecuador, is the Geo-Portal on ARCOM´s homepage. See http://geo.controlminero.gob.ec:1026/geo_visor/

[ix] According to Art. 36 in the Mining Act, concessions are given for 25 years at the time and are renewable as long as a new petition is filed before this period ends, along with a favourable report from ARCOM and the Ministry of Environment.

[x] Interestingly, Bebbington et al note that, until 2008, the Ecuadorian State was obliged by its own law to grant mining concessions whenever a person or a company requested one and that, once given it could be renewed every thirty years (2008: 909).

[xi]I retrieve this information from Dynasty Metal´s home page: http://www.dynastymining.com/operations/zaruma

[xii] See Arsel et al 2014 for an insightful discussion of some of these dimensions.

[xiii] The two, different versions can be retrieved from the section of ¨laws¨ (leyes) under the rubric ¨normative tributes¨ on the Ecuadorian government´s homepage: www.sri.gob.ec

[xiv] I refer here to its latest version that was reformed in December 2015.

[xv] Any metal mining that exceeds 1000 tons a day, in the case of subterranean mines, is considered large-scale which, related to the tributary system, is also obliged to pay windfall tax.

[xvi] Owned by DYNASTY METALS and MINING Inc.

[xvii] See: http://www.dynastymining.com/investors/fact-sheet

[xviii] According to Miserendino et al (2013:718), referring to article 93 in the Mining Act of 2009, on the issue of royalties and tax, small-scale miners only differ from industrial (large and medium sized) miners by paying less royalties (3 instead of 5%) and thus paying the same amount of tax. The law is not clear about this, and I agree that it can easily be interpreted as Miserendino et al do. However, when reading the reports of Dynasty Metals, which is the proprietor of ELIPE Ltd., it is explicit on the fact that it has managed to be categorized as a small-scale miner and thus avoid windfall tax (see: http://www.dynastymining.com/operations/ecuador-mining-legislation).

[xix] On an interesting observation of resentments created by the categorisation small-scale and artisanal miners, which in practice creates an incentive to be categorized as artisanal miners (less bureaucracy, less regulations and less taxation) see Miserendino et al (2013: 718).

[xx] This is of course proportionally, i.e. ELIPE Ltd. pays their tax on larger amounts of income and thus generates more state revenues compared to the mining company that pays the same percentage on a smaller amount of money.

[xxi] Their latest report was published in January 2016: http://www.dynastymining.com/investors/fact-sheet. One could, of course, question its reliability, yet on production estimates, it is principally a tax advantage to under-report. Here I use it merely as to indicate their scale of production.

[xxii] The Minamata Convention on mercury is a global treaty towards mitigating the use of mercury. See: http://mercuryconvention.org

[xxiii] On illegal Ecuadorian gold trade: http://www.planv.com.ec/historias/sociedad/el-oro-sucio-ecuador-sale-avion-desde-guayaquil. On ¨dirty gold¨ from Ecuador and Peru: http://www.planv.com.ec/investigacion/investigacion/oro-sucio-la-pista-detras-del-london-bullion-market

[xxiv] In contrast to mercury, which is a heavy metal, it is actually possible to destroy cyanide components, i.e. detoxify it with the use of microbial species. See Ackil & Mudder (2003)

[xxv] It is commonly agreed across different stakeholders, that there have been improvements (the eradication of child labour and to some extent, improved waste and chemical management), especially with the establishment of a communal tailings pond in mid-2014 where the processing plants are obligated to leave their tailings. However, there is controversy surrounding the infrastructure of the pond, which I can assure is not in an optimal shape and furthermore, a widespread observation that the processing plants only deliver symbolic quantities of tailings. Another major prospect of improvement is the plan to establish a 22 km pipeline for waste and tailings from the processing plants along the Calera River. This has been a joint initiative between INIGEMM and APROPLASMIN, but has yet to become a reality due to bureaucratic obstacles.

[xxvi] See: http://expreso.ec/actualidad/el-legado-toxico-de-la-fiebre-del-oro-NC224935, and; http://expreso.ec/actualidad/mercurio-prohibido-pero-en-venta-BY230047.

[xxvii] I discussed this with Astudillo on two occasions (July 2015 and January 2016) and although it is tricky to make a coherent estimate (utterly complicated by the processing of ore from other ASGM districts), mining activity tend to correlate with international gold prices that have peaked significantly during the last ten years. Considering this and acknowledging the notorious culture of underreporting production numbers, we concluded that the annual gold production in P-Z could be as high as 20 tonnes.

[xxviii] This may be of little surprise anymore, but there are strong reasons to believe that ELIPE have notoriously avoided compliance with mining regulations, exported all its minerals overseas and placed their profits in the British Virgin Islands. See: http://www.ecuadorreview.com/in-depth-ecuador/investigations/ecuadors-dirty-gold-is-transported-to-the-us-on-commercial-flights

[xxix] Ecuadorian Tax authorities are named SRI (*Servicio de Rentas Internas*). All numbers are available online: http://www.sri.gob.ec

[xxx] For Ecuadorian examples on resource curse see Acosta (2013). For Ecuadorian examples of the related phenomena of ¨accumulation by dispossession¨ see Latorre et al (2015).


ATENCIÓN
PISO
RESBALOSO


NO TENGAS MIEDO A FALLAR
TEN MIEDO A NO INTENTAR.
ACCIÓN POÉTICA PORTOVELO.
(APP)

The capitalist economy of the present day
is an immense cosmos into which
the individual is born,
and which presents itself to him,
at least as an individual,
as an unalterable order of things
in which he must live.
- Max Weber 1905

Chapter 3: A will to improve?

Uptown Portovelo, quite close to where SADCO had their headquarters, there is a writing on the wall saying: ¨No tengas miedo a fallar, ten miedo de no intentar¨ (Don´t be afraid to fail, be afraid of not trying¨)[i]. It is signed by ¨Acción Poética de Portovelo¨ (Poetic Action of Portovelo – see picture above). In the context of Norway this would have resonated with the arena of sports and a general encouragement to participate. In Ecuador, this quote refers to love, to keep on searching for love. In the specific context of Portovelo on the other hand, the quote may easily be interpreted in relation to mining. Here, the slogan refers to thousands of miners that have, throughout its history, invested their efforts in the mines, occasionally succeeding, and occasionally failing. Through this interpretation, the quote contains an element of dignity recognising the people who died or lost everything while engaged in mining *and* a praise to keep on trying. In other words, the quote glorifies the hardships of the past as much as it incentives and legitimizes the continuation of gold mining on an individual basis.

Another feature that distinguishes P-Z is its sharp contrast to social processes in so-called Not-In-My-Back-Yard (NIMBY) contexts. In the latter, the logic is basically that people are positive to the idea that industries (extractive or not) will provide for economic development, yet only if the industries establish and operate at a certain distance from their livelihoods (Menegaki & Kaliampakos 2014). A slightly different logic was revealed one day a bit further up-town from the picture above. Along with a local friend and Jose Luis (the photographer), we were invited into a small house, some 20 meters from Rio Amarillo that runs through the town. The owner of the house, a man in his 70s and a friend of him, wanted to show us an old radio from the times of SADCO. He had managed to purchase this massive radio at an auction and explained to us that the SADCO administration used it to communicate with their headquarters in New York. We shot some pictures in the room where the radio was placed when Jose Luis suddenly noticed a hole in the back of the room (see picture above). I had also noticed it, but mistakenly taken it for a fire place (ignoring the tropical conditions surrounding us). Jose Luis asked what it was and the old man responded: ¨Well that's just my old mine, I don't exploit much from that one these days.¨[8] The old man said this in a laid-back tone, emphasizing that the mine didn't produce any value and was practically useless. For us on the other hand, the fact that the man had a mine entrance inside his ¨living room¨ was rather fascinating. Contrastingly, the old man's communication suggested that this was as normal as having any furniture. He simply hoped that gold prices would soon increase again, resembling the phrasing people invoke when they hope for better weather.

This thesis is largely a testimony of how this attitude permeates life in P-Z. In fact, the naturalization of gold mining as a way of life is so strong among some of the miners that it resembles radical, religious faith. In some cases, these two elements are actually combined as the general proliferation of Pentecostalism in Latin America is also at play in P-Z. Typically, this involves a change in life style from a materialistic and sinful life depicted in a stereotypical image of the miner as a hardworking, hard-drinking womanizer, towards religious faith and puritanism (see chapter four). The constant variable however, is gold mining, and this indicates that the activity is compatible with highly contrasting moral beliefs.

Following the rationality of mining as a benign activity which is largely shared among miners and non-miners in P-Z, the issue of regulation in the form of national mining legislation is provocative. It is provocative because it is apprehended as restrictions on the

[8] *Ah, bueno, eso es una mina vieja…ya no saco nada de ahí.*

dimension of poverty alleviation *and* local capital accumulation. Furthermore, it shakes the very fundaments of a rationality in which mining is foremost *life-giving* and thus questions the legitimacy of local identity. Immediately, local miners point to their legacy and the fact that gold mining has sustained people through generations and continues to do so today. This rationality applies as much to gold mining in P-Z as it does to the oil and gas sector in Norway, although the latter is a much more recent example of extractivism. Yet, the list is long on this point; coal in the US, Australia and China (and many other places), mineral mining in Chile, Bolivia, Peru and South Africa (and many other places) and oil in the OPEC countries. Examples of this rationality are not restricted to, but epitomized by fossil and mineral resource exploitation. A fundamental question today however, as sustained in global dialogues on climate change and environmental conservation, is how to leave this extractive history behind. Beneath this question, lies the contradiction between extractivism and sustainability, which seems profoundly incompatible despite of (or because of) public awareness on the hegemony of extractive rationality since the industrial revolution.

Although the mechanism in this contradiction is simple, it becomes highly complex when embedded in numerous institutions and particularly to ideas of modernity, progress and development. James Ferguson (1999) eloquently illustrates how these ideas are themselves influenced by a Western imagination about the ¨third world¨ (in his case Zambia and Africa) as backward and in need of (Western-colonial) guidance. Ferguson demonstrates how material progress and modernity is created through extractivism and the inclusion of Zambia into the global economy, and how the stark decline of copper production not only led to economic exclusion, but consequently to ¨a state of abjection¨ (236) where mine workers felt betrayed by the promises of modernity. In a linear conceptualization of progress and modernity (the imagery of modernity), Zambians regarded this as a declining backloop from a story of success that was essentially predicated upon capitalist accumulation of Zambia's natural resources. For Zambian mine workers, says Ferguson, the sense of abjection entailed a distinction between being hung up (while talking on the phone to someone who befriended you for several years) and that of never having a phone in the first place (238). Zambians were given a phone, but subsequently, hung up.

Scott on the other hand, illustrates how the ¨culture of extractivism¨ is predicated upon the commodification of nature, which ultimately rest on the modern separation of nature and humans (2010: 8). In Scott's book, this is largely articulated in the ¨jobs-versus-the-environment aphorism¨ (10) where the culture of middle-class white workers in the Appalachian coalfields dominantly favours the industry at the expense of the environment.

For Scott, this preference is deeply shaped by the extractive logic which places mankind as masters of nature. This is consolidated by the industry's practice of gender segregation leaving high-paid, environmental destructive working positions for white men (14). Yet the main premise here, one which has also been achieved in P-Z, is to create the idea of the place and space as fit for extractivism, or by recalling the words of Voyles (2015), a ¨wastelanding¨, that is, a place rendered pollutable. Hence, Scott's Appalachian coalfields have long ago obtained the public imagery as a ¨resource colony¨ (2010:13), an achievement that currently facilitates and legitimizes the rather drastic practice of Mountain Top Removal.

Similarly, in P-Z the long history of mining and the hegemonic rationality of gold mining create substantial hurdles for control and regulation, but more fundamentally, the public association of P-Z as foremost a context of mining (and not as a place amid bountiful cloud forests stretching up towards the Andes massif) naturalizes the continuance of mining. As previously discussed, the trademarks of the ¨culture of extractivism¨ in P-Z are: a long mining history, the absence of opposition including the relative absence of the ¨indigenous element¨, extensive informal mining activity, dominance of a few mining companies (in terms of economy and concession rights), the strategic position of the processing plants, and permeating all of this; a notorious practice of non-compliance in relation to both fiscal tributes and environmental/security standards.

This is the situation that governmental authorities face in their attempts to improve the mining sector in P-Z. I borrow the term ¨will to improve¨ from Murray Li (2007), along with her remarks on how problems, practices and places are rendered technical by governments and governmental programs (7). In the introduction of this thesis I remarked, in line with Murray Li, how this leads to the observation that ¨questions that are rendered technical are simultaneously rendered nonpolitical¨ (ibid.). In the previous chapter I illustrated how this articulates in relation to the on-going research on ASGM in P-Z, where the controversial mining/processing practice is essentially reduced to apolitical questions of technical and instrumental nature. Murray Li attributes this practice to the role of ¨trusteeship¨, which she defines as: ¨the intent which is expressed, by one source of agency, to develop the capacities of another¨ (4-5). To a large extent and despite her nuancing of this, Murray Li portrays government authorities (in alliance with colonial powers, and later on, several development programs) in Indonesia as ¨bad guys¨ and local population as marginalized victims. Nevertheless, she underlines that the objective of trustees (i.e. political actors and experts of various kinds) is not necessarily to carry any hidden agendas (9), but essentially grounded in a benevolent intention to improve the state of affairs (5). Yet one of the problems, according to

Murray Li, is the position of trustees as experts, which includes the act of defining the problem as to improve the lives of others. Trustees entitle themselves with power and authority, which leaves them in a fundamentally tricky position in relation to claims of autonomy[ii].

In the context of P-Z, I regard the role of government officials (ARCOM, INIGEMM, MAE and Ministry of Work) as trustees which are supposed to communicate and enforce Ecuadorian mining politics. While ARCOM and the ministries are directly engaged in the enforcement, they are heavily informed by INIGEMM, which again is heavily influenced by the research referred to in the previous chapter. In line with Murray Li, I consider their collective efforts as a rather straightforward benevolent attempt to improve the conditions of the ASGM sector. Yet as I have illustrated, this will to improve is made complicated by the historical observation that Ecuadorian governments have largely failed to empower artisanal miners and continued to marginalize these at the benefits of larger operators (especially considering the politics of mining concessions). This is pivotal in order to understand the culture of non-compliance amongst miners because it suggests that the historical failings of the State have created a general and widespread resentment among the former towards the latter, and that most ¨big money¨ is continuously channelled out of P-Z.

Furthermore, in an attempt to nuance a conventional political ecologist narrative where local, marginalized people are dominantly portrayed as victims, I suggest that this is a complex relation, and that the governmental concern to control and regulate artisanal and small-scale miners (i.e. the will to improve) is not solely driven by neo-liberal interests, but by solid empirical evidence about environmental degradation and malignant human health consequences. This latter observation shows that the apolitical research is, in a sense, valuable and instructive with a potential to inform on pollution and controversial mining/processing techniques (as it informs this thesis). Yet it fails to inform us on the political-economic situation that creates and sustain this practice. And, by ignoring or avoiding this last trait, it sustains the rationality of extractivism and corporate social responsibility (CSR), which essentially reject critical and nuancing voices from emancipating. In their own view, these researchers are the only ones criticizing mining praxis in P-Z, an act they believe is improving the sector both through informing authorities and by directly engaging with technical assistance in the field. It is somewhat hypothetical to suggest how much this research has improved the state of affairs and how much of this hypothetical improvement is due to the presence of ARCOM and its sanctioning practice. Nevertheless, what is not hypothetical and to a large extent the shared consensus (among people external to the mining sector) on the

current situation, is that mining practice in P-Z continues to produce severe contamination of rivers and soil, which translates into extensive health risks for both the people working in the sector, as well as the people living here and downstream. As mentioned, the legacy of mining involves a historical marginalization of artisanal and small-scale miners that cannot merely be placed on the shoulders of the current government. Although the efforts of the Correa administration accentuate this asymmetrical relation by its instrumental approach and its bias towards large mining operators, I have also argued that this situation is sustained by skewed internal power relations in P-Z.

I will return to some aspects of the above-mentioned in the next chapter. In the following however, I will address how this will to improve articulates when enforced in the field through two distinct ethnographic accounts of ARCOM operations. Before and after these empirical accounts I reflect on their implications and how they can be conceived through the concept of governmentality and the process of interlegality.

Apply all the laws you got, but don't shut us down

It should be quite clear when considering the strong legacy of (informal) mining, the complexity of the current situation and the inconsistencies in Ecuadorian mining legislation, that the task of enforcing control and regulation on this sector is all but easy. Perhaps this partially explains the fact that the regional coordinator of ARCOM in El Oro has been substituted four times during the last year (2015/2016). The delicacy of this task was also illustrated by the outspoken ARCOM official in the previous chapter, who said that all mining operations in P-Z would simply have been shut down if legislation were to be strictly enforced. I have already remarked that mining legislation seen through the perspective of its enforcement is essentially a story of everyday negotiations between regulators and miners. What must be taken into account however, is that ARCOM and MAE have a combined staff of 15 inspectors *in situ*, (14 and 1 respectively) while the number of miners range somewhere between 6 000 and 10 000. Although governmental control is, at least in theory, facilitated by camera surveillance of the processing plants along the rivers[iii], it would be an impossible assignment to enforce mining legislation on an individual basis. Hence, ARCOM and more generally, the Ecuadorian mining authorities rely on some sort of government, which Michel Foucault famously defined as a ¨conduct of conducts¨ (1991: 48). Or, by evoking the dimension of power and authority, we can say that the success of ARCOM depends on what Murray Li leaning on Gramsci's conceptualization of hegemony, describes as; ¨an amalgam

of coercion and consent¨ (Murray Li 2007:25). ¨We have to change their culture¨[9] was repeated, not only among ARCOM officials, but also among representatives from MAE and the provincial government. Yet, instead of saying how this could be achieved, they all somewhat assumed that this would happen with continued enforcement of mining legislation.

Applying the perspective of interlegality, I have argued that this concept can be used to acknowledge norms as operating laws in a situation of *de facto* legal pluralism. And as we have seen through some examples, these norms comprise a mining praxis at odds with the national legislation (e.g. waste dumping and open air burning of mercury amalgam). Furthermore, local mining praxis is not only a historical legacy, but also a praxis invoked as part of a ¨counter-hegemonic strategy¨ opposing the enforcement of national mining legislation. Hence, local miners, far from conceiving national mining legislation as a sound regulation resonating a fair treatment of the environment and/or its workforce, largely apprehend this regulation as an obstacle to mining activity which includes both a modest means of subsistence *and* the search for profit.

In the opening story of this thesis I described a situation of wastewater being released from a processing plant. Here I focus on the inspections of mines. Although I did not mention it in the previous case, the issue of waiting, and keeping authorities waiting, is a common strategy continually applied by mining companies upon receiving visits from ARCOM. Undoubtedly, there are several advantages by doing so, in particular the fact that it provides the miners with crucial time to ¨clean up a potential mess¨, before being scrutinized and inspected. Yet, perhaps more importantly, the act of keeping ARCOM inspectors waiting prior to their entry to the mine or the processing plant, re-establish a sense of balance that is somehow violated by the fact that ARCOM appear without announcing their arrival. Both this and the following account contain this ingredient. I experienced this on almost all other occasions as well, sometimes apparently applied as a conscious strategy, sometimes due to practical hurdles (e.g. the absence of administrative staff). In the following I illustrate this and other aspects of regulating encounters.

After about an hour and a half, Carlos (ARCOM's chief inspector on this occasion) said that this was a waste of time and decided that we should return to Portovelo. He told the secretary that we would return after lunch and that he hoped to encounter the responsible engineer. The secretary assured us that we would. Thus we went back to Portovelo, the ARCOM officials openly frustrated by the fact that they had spent the last hour and a half

[9] *Tenemos que cambiar su cultura.*

sweating in the tiny shades outside the mine entrance pretty much in vain. Yet there are different degrees of sweating; while we sat waiting, a young miner pushed a carriage full of ore, shuttling back and forth from the mine to the deposit right beside us. He was totally drained in sweat and kept on going as if the ghosts of despotic mine administrators were whipping his back. It was a display of hard work embodied in youthful strength and discipline. I thought of this as we descended the hill in the air-conditioned, four-wheel-drive pick-up truck.

When we returned after lunch, the administrating engineer was there to receive us. He immediately excused himself for his absence before lunch by telling us that he had been deep underground and that the ¨phone¨ did not work. Carlos accepted his excuse, but dryly remarked that there should be some sort of communication in case of an accident. He then hastily continued to explain the reason for this visit/inspection and asked the engineer for the environmental certificate (*licencia ambiental*) to work on this concession, well knowing that the engineer did not have this requisite at hand. In fact, it was a shared problem for all the mines working on this very concession and ARCOM was following up by visiting the different mines and confronting them with this issue. The engineer said that the owners of the mine were working with this acute problem at this very moment and that it would soon be ready. Carlos responded that ¨yes¨ he could imagine that they were working on this, but only since the end of last week, and only because he had initiated this process upon observing this lack of operating requisites in another mine working on the same concession. The engineer responded: ¨Well, you got me there. If they just began working on this last week, I don´t know what to say to you. Yet, still, the important thing is that they are working on it…¨[10] Carlos repeated that the owners only worked on this now because he had noticed and reported on this illegality. The companies involved, he said, had been operating for a long time without environmental certificates. Carlos then finished off by reciting an article in the Mining Act and questioned the engineer what *he* thought was the correct thing to do given these circumstances. The engineer didn't start to quarrel, but remained silent. ¨Well, stop the work…¨ (*Paralizar pues…*) said Carlos quietly, answering his own question. ¨No, no, no, you can't paralyze us. They are working on those papers now, and I´m sure it will soon be okay¨[11], responded the engineer. Carlos merely looked at him as if to say ¨the law is the law¨, but

[10] *Bueno, ahí si me ganaste. Si recién la semana pasada están en esto no se que decirte. Pero lo mas importante es que ya lo están haciendo…*

[11] *Nooo pues, no se puede paralizar las actividades. Ya están trabajando en eso y seguramente lo van a arreglar.*

didn't push it any further. The atmosphere was quite good, although Carlos had clearly made his point. There was a shared and implicit understanding that a closure of the mine would be a very drastic event with far-reaching economic consequences for the company and its workers (three shifts of 20-25 workers a day). Then after some minutes, there was a change of focus and Carlos asked the engineer to take us into the mine for a brief inspection.

We put on helmets, rubber boots (with metal tips) and flashlights – indispensable and obligatory equipment as we entered the muddy tunnel in the hillside of Portovelo. ¨Cabo the Hornos¨ is the name of this narrow valley, which is the site of several concessions and numerous mines of different scales. At the time we entered the mine, there was not much activity going on although we didn't descend to the depths where dynamite was used to blow out the ore. Occasionally we noticed the explosions as some version of a far-away thunder while directing ourselves to the engineer and commenting upon it as to balance a lingering sense of insecurity – ¨they're shooting right? Yes, they are.¨[12]

The mine was a dark and gloomy place. The ladders leading down were made out of wood, about 30 cm wide, muddy and slippery from the humidity. Each ladder was about 5 meters long, descending in 90 degrees and ending on a small platform. This structure was repeated several times, occasionally replaced with descending tunnels (with stairs) and then another structure of ladders. Parallel to the structure of ladders, which was obviously made for the workers, there was a system of rudimentary elevators designed to lift and carry ore and rocks. Every 30 meters there was a level of tunnels where ore had been exploited. In the first levels, close to the surface, the tunnel walls were made up of a clayish matter, while this turned into hard rock deeper down in the mine.

We descended four levels (120 meters) and went for a walk in the tunnels at this level. The tunnel was big enough for me to walk upright although I had to bow down through several passages (my height is 1.86 meters). Some places were very hot and humid while others were better ventilated and fresher. Curiously we passed by the spot where the ¨telephone¨ was placed. Carlos tried to call the secretary, but the phone was notably not working properly, which came as no surprise since this very spot was extremely hot and humid (probably corroding the phone line). We continued to walk. At one point we witnessed a big hole in the wall/roof, covered by large wooden trunks. The engineer explained that it was for security (preventing rocks from falling into the tunnel) and that he had spent lots of time and efforts explaining to the mine owners that this was necessary. This remark resonated

[12] *Ya están disparando? Si, si.*

with a general statement from ARCOM officials about the lack of willingness, on behalf of the mine owners, to invest in infrastructure and security measures. In particular, during ¨hard times¨ the revenues to cover maintenance costs were hardly prioritized, consequently leading to higher risks for the mines working underground. To my knowledge (corresponding with media coverage and statements from ARCOM officials), at least four people died during the three months of my first fieldwork.

The engineer that guided us in the mine was very much aware of the importance of security. He had recently returned from work in Chile, where he said that security matters were given much more priority, but explained to us that ¨ here in Portovelo this is a bit complicated…¨[13]. At least there was fresh water at hand, available from a tap that was set up in a passage in the tunnel. The engineer assured us that it was clean water and Juan (the ARCOM official from the introductory story) hesitantly drank a small cup. Then after some more walking we encountered a solid, metal gate with a lock that was covered with heavy armour. On our side, there was a camera pointing directly at this gate. The engineer unlocked it while he explained that this was a necessary measure in order to keep intruders away from the tunnels. I had heard about this from other mines as well, but just couldn't believe that someone would descend into this system of tunnels in order to steal ore that they would have to carry out manually through ¨their own¨, improvised tunnels. One thing is the remarkable danger of such an endeavour, but another aspect is the remarkable effort one has to invest in carrying enough ore for it to represent a valuable theft (considering that a profitable concentration of gold per ton of rock material starts at 5-6 grams). Notwithstanding these practicable hurdles, this was a frequent problem, according to the engineer. Another dimension is that, by all means of probability, the intruders are dependent upon ¨inside information¨ for these operations, accordingly turning the workers of the mine into the main suspects. The workers are ¨body checked¨ by the woman secretary every day after finishing their work (typically, there where jokes about how the secretary enjoyed this). This daily revision was meant to keep workers from stealing gold, but added a suspicious atmosphere to the work. And although the workers seemed to joke about it, according to the engineer, it was not uncommon to confiscate gold during these ¨body checks¨.

The ARCOM officials decided that it wasn't necessary to descend any further and with that we started our climb back to the surface. Wet, sweaty and muddy we found ourselves in daylight once again. I could only imagine the physical efforts it takes to work in

[13] A*quí en Portovelo esto es un poco complicado...*

these conditions. We got to refresh ourselves in a water tap just besides the secretary's office and sat down for some concluding remarks with the engineer. There was a good atmosphere and upon leaving, the engineer's last words were: ¨apply all the laws you got, but don't shut us down¨[14]

The ARCOM officials always wrote their reports after conducting inspections. These reports are confidential and regarded as non-achievable secrets by people and miners in P-Z. Yet for ARCOM, they serve two important functions: 1) the making of a legal document that informs and registers the conditions regarding different criteria of the law, i.e. the document serves as a foundation for decision making and eventual sanctions, and 2) the documentation of the mine/processing plant conditions enables ARCOM to address responsibility upon a future accident. The conditions of this mine were not particularly bad, relatively speaking, but the problem was rather the lack of environmental certificate for working on this very concession. The following procedure for this was that Carlos and Juan would report to their superior, an act that was followed by a discussion leading towards the decision of what to do (all matters taken into account).

Anyway, there was still some time left of this day and we continued uphill towards another mine on the same, problematic concession. The ARCOM officials were quite familiar with the area, at least Carlos, along with the driver who was a local man from a neighbouring town. The driver parked on the side of the road, but in order for us to reach this mine we had to descend on a small, steep path to a shack and a very rustic mine entrance some 50 vertical meters below. The reason we could easily find it was because of a system of cables between the mine entrance area and the road where we parked the car. The cables were apparently installed to pull up small carriages of ore that were subsequently transported by truck to a processing plant. Arriving at sites like this, the ARCOM officials would always be a bit cautious and announce their arrival by shouting: ¨Good afternoon!¨ (*Buenas tardes!*). The reason for this was not only out of politeness, but also because of the presence of dogs of varying size and aggressiveness. This time however, no dogs were there to greet us, but a young man came out of his shack. He responded to the ¨good afternoon¨ and Carlos explained who they were, the purpose of their visit, and finished off asking for the responsible administrator of the mine. The young man remained calm and went to fetch the administrator. While we waited I observed the shack from where the young man came. It was an open construction with no wall on the side in front of us. Inside I could see a woman preparing

[14] A*plícanos todas las leyes eso si, pero no nos cierran.*

food and a little girl playing on the floor. They had of course noticed us, but ignored our presence and continued with their activities. Notably, their house was in poor conditions, but there was a satellite dish from Direct TV (one of two major Ecuadorian satellite services) securing TV signals for this family on lonely nights. Considering this and the aspect of poverty in general, relative poverty can most certainly be observed in this region, but still, people are not desperate. Food and basics remains quite cheap even for poor people and the friendly climate, except for occasional heavy rains and very hot days, means that people can get along with modest material possessions.

While the young man had seemed rather indifferent to the arrival of ARCOM, the administrator signalled distance and scepticism. He arrived after a few minutes and was confronted with the same problem as in our previous visit: the lack of the environmental certificate. As always Carlos phrased it as a question - ¨Do you have the environmental certificate?¨ - along with some other obligatory documents. The administrator said that ¨yes, but down there in the office¨, pointing down at the building where we had just been. Carlos explained that we had just visited that site, and they (the responsible engineer from the other mine) could not present their own documents either. The administrator repeatedly said that all the documents where there and that everything was in perfect order. Obviously, Carlos doubted this statement, but since the administrator couldn't present any documents, Carlos' solution was to demand the administrator to present them in a couple of days when he returned. ¨Yes, no problem¨, was the administrator´s response.

After that clarification, the administrator explained that it was hard for miners like him, to have all the papers ready when ARCOM came on their inspections. He explained that they were just extracting a little bit of ore and that this barely amounted to make a living, emphasizing the combination of increased input prices and low gold prices. The young man stood silently beside us during the whole conversation, as if giving some sort of protection and moral support to his superior. The whole situation was dense and resonated with historical anecdotes of tax collectors visiting poor people in difficult, economic situations. The ARCOM officials also noticed this and tried to maintain a friendly tone as they summed up the situation by repeating the request of all obligatory documents within a couple of days. This was accepted. Finally, we said goodbye and climbed up the hill towards the car. And with this, the ARCOM inspectors ended their working schedule, yet only after writing out their reports of the day.

The reader must forgive me for being rather detailed in my descriptions here. I do this with the aim of bringing the reader into immediate proximity with the enforcement of mining

legislation, which constitutes the main analytic focus for this thesis. Without attempting to portray the ¨full experience¨, which obviously includes a lot more than what is possible to describe here, I wish to emphasize that this enforcement is always applied in specific contexts with specific conditions. Thus, and echoing a key argument in Murray Li's book, the *exclusion* of certain facets of ¨the problem¨, which in the context of P-Z would translate to ARCOM's (including INIGEMM, MAE and the above-mentioned apolitical research) exclusion of social, political and economic dimensions of the mining activity, ¨both limits and shapes what improvement becomes¨ (2007: 8). Furthermore, the empirical account above also indicates the difficulties in enforcing mining legislation. Not only is the safety of miners constantly at risk, but mining legislation is hardly useful to specify the limits between a safe and an unsafe mine. In practice, it is all up to the individual decision of the inspectors, which in turn face a significant pressure (from miners and administrators) to circumvent any safety/environmental concern. This pressure comprises not only the economic concern of the owners and workers of the mine, which can be related to Scott's jobs vs. the environment aphorism as suggested above. This pressure also includes the habitus of local mining practice, the weight of history and the aspect of local autonomy in opposition to external and centralized impositions. Accordingly, this very moment of confrontation between ARCOM's enforcement of Ecuadorian mining legislation and its object (local mining praxis) is vital to understand the process of interlegality in P-Z. It is vital because it indicates how local miners oppose and manage to modify formal laws through negotiations where they invoke situational explanations as the cover for controversial, informal praxis. ARCOM inspectors on the other hand, know very well that their potential success is dependent on a friendly tone and that a harder line will lead to increased distance between them and the miners. Hence ARCOM opt for compromises where they attempt to maximize compliance to formal legislation. Yet importantly, they catalogue and document observations at odds with legislation as to free themselves from responsibility in the case of accidents and to create an archive to sustain future sanctions. Alternatively, although this was not the case in the account presented above and despite the fact that I only rely on personal statements (from miners and lay people), corruption may and probably does (occasionally) interfere with the praxis of regulation at this stage.

Without following the phenomena of corruption any further here, what can be pointed out is that the above-mentioned strongly indicates that ASGM in P-Z constitutes what Simon Thomas, leaning on André Hoekema, conceptualizes as a ¨semi-autonomous social field¨ (Simon Thomas 2009:165). Recalling the discussion of this (chapter 1), the empirical account

presented here suggests how ¨the process of interlegality is influenced by dominant (top down) national law, as well as by local (bottom up) pressure¨ (ibid.). Still, given the marginal compliance with national legislation, one might legitimately ask if it is not the local, bottom-up pressure that constitutes the dominant scheme here? My short answer to this is that national legislation embodied in ARCOM inspectors, is contextually (i.e. situational) dominant because it represents the Ecuadorian State, which ultimately have a monopoly on legitimate coercion. Yet there are at least two important modifications to this. First of all, the State, as the owner of all subsoil resources, also has strong interests in the continuance of ASGM in P-Z despite the fact that mining largely avoids compliance with mining legislation. These interests are fiscal income (direct and indirect) in combination with social stability, and the safeguarding of a considerable economic engine that contributes in other sectors of the Ecuadorian economy. Second, while ARCOM may draw on State authority in specific situations, these inspections are only minute points across temporal and spatial ASGM operations that are largely dominated by local mining praxis. This is easily observed in contexts without the presence of ARCOM, where miners do things according to their own norms and outspokenly say that ARCOM officials are more interested in bribes than to facilitate improvements in relation to safety and environmental standards. In other words, formal mining legislation struggles to become a government, i.e. ¨the conduct of conduct¨ operating effectively at distance.

According to Foucault, governmentality, or the act of governing, means ¨to act on the actions of subjects who retain the capacity to act otherwise¨ (Murray Li 2007: 17)[iv]. Moreover, and still following Foucault, governmentality does not merely ¨seek one dogmatic goal, but ´a whole series of specific finalities´¨ which may be incompatible and contradictory (ibid.: 9). In this perspective it is possible to identify two essential observations. First, ARCOM's enforcement of mining legislation reflects the ambiguities of legislation and governmental politics related to ASGM, that is, a pro-mining attitude that is incompatible with the informal nature of ASGM at odds with legislation. Second, as several authors have pointed out (Veiga et al 2014; Fold et al 2013), formalization of informal ASGM has largely been a failure because it does not manage to have an improving effect on mining praxis, but rather tends to legalize this controversial praxis. Hence there is little confrontation with regulating effects. This is discernible in the account presented above – whether the owners of the mines managed to present the environmental certificates or not, hardly impacts on their praxis in the long run. In fact, this somehow illustrates the impossibility of ARCOM's task: sanctions create more distance and opposition to legislation, while their current efforts within

a diplomatic approach also struggle to have any improving effect (in terms of security and environmental concerns). Hence, the ¨whole series of specific finalities¨, which in this context translates into ARCOM's regulating amendments according to the Mining Act, are hardly compatible with the emphasis on a special and privileged regime for small-scale and artisanal miners (cf. the Mining Act: Art. 134).

Furthermore, in the eyes of small-scale and artisanal miners like the ones referred to above, it is difficult to interpret the practical implications of President Correa's insistence that Ecuador has to take advantage of ¨its last gram of gold¨ (cf. footnote nr. 3 in previous chapter), and the fact that he has publicly and repeatedly announced that ¨we (Ecuador) cannot be beggars sitting on a sack of gold¨ (de la Torre & Ortiz Lemos 2015: 9). The dilemma was captured when Carlos questioned the engineer of his opinion on what to do given the fact that the mine was operating without an environmental certificate. In this situation, the silence of the engineer implicitly said that ¨well, environmental certificates or not, that's basically your problem, here we just have to keep on mining¨. Carlos confirmed that, according to the law, the mine should be put to a stop, but he refrained from taking any actions to do so. And given the dominance of informal mining, instead of becoming an example on the obligation to comply, a temporary closure of the mine would foremost bring economic misfortune to the workers and hardly any improvement of mining praxis. The only thing left from the perspective of the regulators, is a belief that ARCOM's continued presence and pressure will someday have an (miraculous?) effect on compliance. This may rightfully be conceived as a utopia (cf. Hinton et al 2003) given the fact that local miners continue to mine as they have done for centuries, despite the fact that their companions regularly die in the mines and despite the fact that their children grow up in a contaminated atmosphere.

This is essentially where most apolitical analyses stop to conclude that any improvement of ASGM in P-Z depends upon: more public awareness of the problem, increased awareness amongst the miners, educational outreach and training programs, financial assistance, labor unionization and a revision/redefinition of Ecuadorian mining legislation (Nichols et al 2015; Veiga et al 2014a; Veiga et al 2014b; Miserendino et al 2013; Velasquez-Lopez et al 2011). I agree that there might be a potential for improvement in these recommendations, especially the last point, but these recommendations are, perhaps more than anything else, reflections of a self-referencing scientific epistemology (see chapter 4). Contrastingly, as I have emphasized quite thoroughly by now, the most substantial hurdles to any improvement lie in the political economy of P-Z and the power relations that permeate this.

In the following section I embark on yet another inspection with ARCOM as to provide for more empirical support for this discussion and to highlight other dimensions that comes along with the act of implementing mining legislation. As mentioned, law enforcement is always specific and contextual despite the routines that ARCOM attempts to establish. As I illustrated in the previous chapter, this is utterly complicated by the fact that legislation is problematic in itself (in the eyes of all actors involved, including ARCOM) and dynamic (shifting). Nevertheless, as briefly indicated above, the size and scale of mining operations being scrutinized also conditions the ¨limit and shape of improvement¨. The next account emphasizes this influence.

The weight of Size and Scale

- Good morning (*Buenos días*), I said as I entered the small reception hall at the ARCOM offices in Portovelo.
- Buenos días, replied the secretary from her little office where she was accompanied by one of the drivers, watching something on her computer.

There were some more ¨buenos días¨ here and there from other people as well, before I entered the large office where my two main companions, Juan and Carlos, had their desks.

- Good morning, how are things going?, I said, saluting the two men.
- Hey, how do you do?, said the chief inspector (Carlos), while Juan nodded his head in a ¨buenos días¨ style. Both of them were sitting in front of their respective computers, starting their day as usual by checking e-mails and reviewing the major newspapers (a million-dollar routine). Yet, Carlos was typing on his computer and looked slightly more stressed than normal.
- All good, I said slowly and relaxed as to not bother Carlos with my presence as he seemed to have urgent matters to take care of.
- And what's up today?, I asked Juan who apparently was reading the news on his computer some five meters aside from Carlos.
- Today it looks like we are going to the big mine… The thing is that yesterday, someone filed a complaint against that company (ELIPE) and we have to go and check it out, replied Juan.
- Ah, what kind of complaint?, I asked.

- Supposedly, it's because they are working outside their concession, that is, on the concession of someone else, replied Juan.[15]

At this point Carlos was talking in his phone half-standing as if he was finishing the conversation and had already begun to move.

- Let's go, let's go boys! (*Vamos, vamos muchachos!*), he said referring to us while he gathered his helmet, flashlight and boots.
- Let's go (*Vamos*), I replied and immediately put on the rubber boots I carried in my backpack.

We got ready and went out through the hallway where Carlos commanded one of the drivers to accompany us. We then continued down four floors of stairs and found the pick-up truck parked in the street. It was almost like we were firemen on a mission. And actually it was a mission, a mission to confront the biggest mining company in this region with a denunciation (on behalf of a third party) claiming that they were working illegally. The actual mine, named ¨Cabo de Hornos¨, is situated in the narrow valley with the same name, a three minutes' drive from the centre of Portovelo, quite close to the other inspections referred to above. Yet as this is the largest mine in P-Z, the scale of things marked a clear contrast to all the small and rudimentary mines in these hillsides. Here there was a big gate at the entrance area where we were met by an armed guard who would not let us in until his supervisors told him to.

Still, the first step on this occasion was the normal procedure: Carlos introduced himself, said that he represented ARCOM and that he wanted to enter on the purpose of doing an inspection. Both he and Juan showed their credentials to the armed guard, who asked if he could borrow them for a minute and returned to his office on the other side of the gate. Temporarily, we were left outside the gate waiting in the pick-up truck. The sun was strong and merciless. When the driver realized that this would take some time, he backed up and parked the car in the shadows of some trees. After about ten minutes, the guard returned with the credentials, saying that he had spoken to his supervisor, who in turn had spoken to one of the company lawyers who said that we could not enter without giving any notification of the visit. This was clearly an illegal conclusion and Carlos explained to the guard that ARCOM

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[15] - *Buenos días. Como estamos?*, los saludé a los dos hombres.
- *Ah, que fue, como estas?*, me respondió Carlos.
- *Todo bien aquí*, le dije tranquilamente para no desconcentrarlo en medio de varias tareas.
- *Y que hay para hoy?*, le pregunté a Juan quien parecía menos ocupado.
- *Hoy parece que vamos a la mina grande…Es que ayer en la tarde metieron una denuncia a esa (ELIPE) empresa y nos toca ir a ver*, respondió Juan.
- *Ah…Y que tipo de denuncia,* le pregunté.

had the authority to enter all mining facilities in the Republic of Ecuador (cf. Art. 74 of the Mining Act). The guard said that he did not know about that, but simply followed orders from his supervisors. Carlos asked for the lawyer's telephone number, which the guard recited from the contact list on his cellular phone. Carlos then called the lawyer and talked to him for about five minutes. When he returned to the car he was slightly upset and said that the lawyer had repeated what the guard told us. We all (Juan, the driver and me) understood that this could escalate the situation, as the message from the company lawyer was an illegal conclusion. It was as if Carlos felt sorry for the way things had developed because he knew that according to the law, he was right and they were wrong. Therefore, he immediately called *his* supervisor (ARCOM's regional coordinator) and explained the situation.

At this point I was very curious as to what would happen because the situation had evolved into a kind of litmus test as to how ARCOM handle these kinds of conflicts. If it had been a small mine, I don't think Carlos would have even bothered to call upon his supervisor, but this was a mine with big installations, significant production and many employees (70 persons per shift - three shifts). However, in this situation ARCOM proved itself as consistent with Ecuadorian law. Carlos talked to his supervisor who said that we should go and get the police if they did not open the gate. Carlos called upon the company lawyer once again, and gave him a diplomatic reality check. He hung up and we were left waiting once more. Then after some five minutes, the guard opened the gate and we drove in, stopping outside the guardian's office where three representatives from the company came to meet us.

Only at this stage did I present myself, i.e. my role as an observer and student. I was granted access along with ARCOM, and just had to leave some identification at this office before continuing. The representatives told us to follow them in their car. Finally, we came to a parking lot besides several office facilities. The driver parked his car in the shade and remained there with his smartphone as usual. Carlos, Juan and me followed the representatives, who turned out to be the company environmental engineer, a computing engineer and another engineer, to the superintendent´s office. Once inside we were greeted by the superintendent and a companion who were standing over a big map on a table, apparently discussing technical issues about the mine. The superintendent was from the US and did not speak Spanish, at least he did not while we were there. Therefore, the engineers who had accompanied us immediately began to explain who we (excluding me) were and why we were here, in English. Carlos and Juan were a bit perplexed, but patiently awaited the situation.

- *Supuestamente es porque están trabajando afuera de su concesión, es decir, en la concesión de otros*, me respondió.

Carlos also explained the reason for the visit and this was translated to the superintendent. The superintendent gave the orders to fetch a particular man from down underground and also told the engineers to localize another man. He then withdrew to his office next door, yet leaving the door open. We were told to have a seat and make us comfortable, although there were only two chairs in the room. We were also told that this would only take a minute or so, that is, in order for them to localize and fetch the man who would take care of our visit.

We waited for more than an hour. In the beginning there was no immediate rush, but after a while, both Juan and Carlos became impatient and furthermore, suspicious about what took them so long. I had, after a while, introduced myself to the superintendent when he came out of his office and we had a short conversation about Ecuador, how long he had been around, what we liked and disliked etc., an informal conversation with little talk about mining issues. I explained my role as a student of environmental studies at a university in Norway, which he saluted in positive, but brief terms. I asked him how come he was here and he said that he had been given this opportunity and had been here for five, six months now. He liked it, he said (referring to Ecuador), but also said that he had been working the whole time and not been able do any kind of tourism. The superintendent must have been somewhere in his mid-forties and what gave him a sharp contrast compared with the other employees (besides the language) was that he wore informal shorts (surfer style), a t-shirt and sandals. The other workers wore formal shirts, long trousers and occasionally, the typical construction helmet and reflexive west. Still, despite his informality, no one seemed to doubt the superintendent´s professional integrity – he was, by far, the man in charge.

The engineers who had accompanied us, came and went as we sat in this office waiting. Obviously they were also uncomfortable by our impatience and by the fact that it took such a long time when they had told us that ¨the man¨ would soon be here. The computing engineer showed us a 3-D graphic of the mine on his computer and zoomed in on the concession in dispute. Seemingly, there should not be any problem as this company had several concessions in the area. The concession in dispute was shared among them and eight others, yet the majority (more than 60%) belonged to this company. The computing engineer also told us that they had a mutual agreement with the proprietors of the neighbouring concession, but then refused to say anything more about these things, saying they were outside his area of competence. Carlos asked several times about details of the graphic and more general questions, but he kindly refused to answer.

In the end we ventured out of the office to have a look at the immediate surroundings, although there was not much to see. We waited and waited. Carlos had told the driver to

return to town for lunch and that he would call him when it was time to leave. Even the superintendent left in a car accompanied by a worker and returned with two packs of cigarettes and a Red Bull in his hand. At this point we heard some voices saying that our man had finally arrived. We went back to the office/room where we had spent most of the time and in came a big man with an accent from Quito. He briefly said ¨good afternoon¨ (*buenas tardes*) before he went straight to the bathroom to refresh himself. Then, with a natural authority stemming from a combination of a firm, confident voice and a solid, heavy weight body, he apologized for keeping us waiting and asked how he could help. Carlos did the talking and explained that the reason for the visit was essentially due to a denouncement by a third party on a supposedly illegal mining activity outside the company's concession. The man responded calmly on this accusation first of all by referring to the company´s legal offices in Quito where all these kinds of issues were to be handled. He then continued to explain why he thought this denouncement was of ¨ bad faith¨ (*de mala fe*):

At this mine we have virtual maps of approximately where we are inside the mountain. As you know, we go much deeper than most of the other mines around. I can assure you that once down there, it is hard to determine one's position with accuracy, a lot worse in all the mines without real maps. As for this denouncement and the claim that we are working outside our concession, it is impossible for these people to know where we are working. We are working at depths that are, by far, superior to any of the neighbouring mines. What is true, and what I believe is the real issue here, is that there are many informal miners who work on *our* concession and we try to mitigate this by blocking their entrance from below.[16]

Carlos and Juan listened. Carlos said that, ok, this might be the case, but he wished to have a look inside the mine anyway. This ¨anyway¨, he said, was because he did not carry instruments to scan the mine and that he was aware that such a thing would take weeks and probably months of work. Still, he wanted to visit the mine for a general overview and to be guided to the area underneath the concession in dispute. Ok, said the man (hereafter Ernesto), no problem, we can do that.

A pick-up truck was called for and immediately arrived at the parking lot close to the office where we found ourselves. We got in, Ernesto in front with the driver, the three of us in

[16] *En esta mina tenemos mapas de mas o menos donde estamos dentro de la montaña. Como ustedes saben vamos mucho mas profundo que las otras minas por aquí. Les puedo asegurar que una vez ahí abajo es bastante difícil determinar donde uno esta, peor si uno no tiene un mapa. Al respecto de esta denuncia diciendo que estamos trabajando afuera de nuestra concesión, es imposible saber para estas personas donde estamos trabajando. Nosotros estamos mucho mas profundo que cualquier otro por aquí. Lo que a mi me parece el verdadero asunto aquí es el hecho de que muchos mineros artesanos están trabajando ilegalmente en nuestras concesiones y nosotros tratamos de bloquear su acceso desde abajo.*

the back and an additional four workers in the pick-up carriage. We were invited to share a Coca-Cola before entering the mine and Ernesto poured it into plastic cups that we were handed. He said that the mine had some hot areas and that it was good to refresh oneself upon entering, although he commented that the Coca-Cola did less with his actual thirst. Finally, we were ready to enter the mine.

At the entrance we had to write down our names and contact info. We were then supplied with gas masks. Compared to all the others mines I visited, this was a totally different story. The descent was designed as a downward tunnel in spiral with enough space for big trucks entering to pick up and carry ore and rocks. From this spiral, at every 30 vertical meters there were tunnels reaching out more or less horizontally, following the ores. We descended slowly while Ernesto kept on talking about the mine and the conditions. Every now and then we paused and went for a stroll in the tunnels. Ernesto explained how they drained the mine by pumping the water up from every level into small pools, which in turn, was pumped up to a similar pool in the next level. He showed us the smokestack vents that secured a decent level of oxygen and several other installations. There were large signs on the rock wall informing workers and visitors on the depth, the number of the level and the direction of the exit. In total we descended 350 vertical meters. At this depth the heat was intense and the humidity likewise. We went for a walk and a talk, always accompanied by the four workers who did nothing but to follow us. The conversation somehow picked upon the theme of burglars and thieves entering the mine. Ernesto told us that it was a severe problem and that they permanently had guards walking around in the tunnels. Carlos asked if they were armed, and Ernesto answered; ¨no, but the ones outside are…¨. In parallel to the previous account presented above, Ernesto also told us that they always caught workers trying to smuggle out some valuable stones, ore or gold.

As for the denouncement and the supposedly illegal activity outside the concession, Carlos soon realized the impossibility of verifying their position underground. He already knew this before entering, but still wanted to have a look as to have, at least, a symbolic impact on ELIPE's confidence. And we most certainly had a look, as we spent roughly an hour or so underground. After a while, Enrique's comments seemed to convince both Carlos and Juan that there was no illegal mining going on here. On our way up again, the conversation loosened up and touched upon working vacancies in this mine. Ernesto told Carlos that they were currently looking for an engineer to work underground as the former, a Peruvian man, had not resulted in any good and had been fired. Carlos asked about the salary and working schedule. The working schedule was normally 11/4, i.e. eleven days of work and

four days free, said Ernesto. But as many people, including himself, lived far away (in Quito), it was also possible to work a 22/8 schedule. The salary though, was no good though, joked Ernesto. Yet, shortly after he said that it was around 2000 dollar with additional benefits (a month). This was commented upon as ¨quite good¨ (*mas o menos*, in a positive tone) later on by Carlos, Juan and the driver when we returned to the ARCOM office and called it a day. Besides the observation that this kind of conversation would hardly happen in the context of smaller mining installations, it indicates a shared belief in ¨responsible mining¨ as a means for development and accordingly, a shared scepticism towards more rudimentary forms of mining.

Once in the office however, Carlos was very curious about the contents of my talk with the superintendent. He wanted to know if he had commented upon the role of ARCOM. I said that we had barely touched the issue of mining. Carlos then explained to me that a few years earlier, some of his colleagues had conducted a thorough inspection of ELIPE's processing plant called ¨Golden Valley¨. They had discovered several illegalities and actually taken all measures to paralyse production, including the characteristic application of ¨enclosure banners¨ at the entrance gate. Then, while returning to their office, they had received a phone call from the regional coordinator of ARCOM commanding them to return to Golden Valley, remove all the banners and re-open the permits for production. Carlos said that this had created frictions between the ARCOM staff and the regional coordinator back then, since the latter had not given any explanation to his command.

While this last remark indicates a case of corruption, a more general observation in this account is how fragile the professional limits between the regulators and the miners can be. The computing engineer actually told us that he had previously worked for ARCOM in another region, and throughout my fieldwork I noticed several examples of this in the professional trajectories of both miners and regulators. Especially in the case of ELIPE or other ¨modern and developed¨ mines, ARCOM largely share the moral compass in the narrative of corporate social and environmental responsibility, i.e. that mining is good as long as it is done in a ¨responsible manner¨. Hence ARCOM officials consider these companies as viable alternatives to a continuing career as law enforcers/bureaucrats.

As remarked above, this rationality is also reflected by the Correa administration, who explicitly and increasingly promotes extractive industries as a means for development. As several scholars have underlined, this is a problematic position because of the inherent nature of extractivism, and in the case of Ecuador, due to the contradictions with the ambitious reforms in the Ecuadorian Constitution and national development plan (cf. Arsel et al 2014;

Escobar 2010). President Correa may be right to indicate that extractivism combined with political rhetoric of sustainability and environmentalism is conventional praxis amongst many industrialized countries, and he actually recur to invoke the Norwegian example on high-profile, double discourse on this point[v]. Nonetheless, he can hardly escape the tension this double bind has created with the indigenous movement, the environmentalists and even national neo-liberalists who, opportunistic or not, stress this contradiction while engaging in the increasingly popular sport of opposing the Correa administration.

The account from the inspection of ELIPE's ¨Cabo de Hornos¨ mine gives empirical support to suggest that power and authority increase with an increase in size and scale. Not only is this discernible through the observation that Carlos and Juan essentially subjugated to the words and authority of Enrique, but also through the latter's reference to the company's legal department in its Quito headquarters as the ¨correct¨ place to address any critic. This act of externalizing communication and responsibility to a team of lawyers far from the site of dispute, resembles a well-known trademark of corporate behaviour[vi]. It also echoes the praxis of SADCO as illustrated in chapter one. Moreover, the outspoken preference and renewed incentives from the Correa administration towards foreign large-scale mining companies is largely an invitation to a complementary alliance between these stakeholders (i.e. the State and the Corporation). Although this takes a different shape in the contexts of large-scale mining in Zamora Chinchipe, the government's bias is the same in P-Z. This is problematic in several aspects, but regarding the enforcement of legislation, it articulates in ARCOM's lack of potency to confront these actors and a lack of governmental back-up to issue and sustain sanctions. This is hardly ignored by small-scale and artisanal miners, but quite contrary, interpreted as just another facet in the continuity of the State's historical preference for large and powerful mining companies. Hence, it suggests that history repeats itself, i.e. the largest companies do as they please and that the ¨big money¨ is notoriously exported out of P-Z. In line with Fergusons observations on the sense of abjection amongst Zambian mine workers, this furthermore suggests that small-scale and artisanal miners in P-Z have never been fully included and recognised by the Ecuadorian State and subsequently that their destiny today, as historically, is in their own hands.

Concluding remarks

In her book that has largely guided this chapter, Murray Li outlines the limits of governmentality (2007:17-9). Although there is a qualitative difference in analysing

improvement schemes and development programs in the Central Sulawesi highlands and the enforcement of mining legislation in P-Z, there are important commonalities and similar mechanisms, which make the analytic in ¨the will to improve¨ useful for this discussion. Furthermore, the emphasis on the *limits* of governmentality is much less discussed compared to the *critic* of its application related to both conservation/environmentalism (Agrawal 2005) and neo-liberalism in the guise of states and corporations (Larner & Walters 2004). In the context of ASGM in P-Z, it is rather the limits and not the dominance of governmentality, that takes us closer to an understanding of ¨how power works and what it does¨ (Murray Li 2007:19). According to Murray Li, some of these limitations are: ¨men in their relations, their links and imbrications are not easy to manage¨ (17) and in Marxian terms, the difficulties of governing ¨men in their relations with wealth, resources and means of subsistence…as the fulcrum of class-based injustice and political mobilization¨ (ibid.)[vii]. In P-Z this can be discerned through the respective characteristics of different scales of mining operations, their relations to place-making, varying political-economic power *and* its complex co-existence.

However, what is interesting to observe in relation to interlegality seen through the empirical accounts presented in this chapter, is that ARCOM officials' roles as trustees entail a navigation between the norms reflected in formal mining legislation and the normative scheme applied by miners. To some extent, these legal systems align in the account from the inspection of ELIPE's mine, yet mostly on a rhetorical level, that is, through a consensus on the rule of law which in praxis is notoriously challenged by ELIPE as much as smaller operators. ARCOM officials on the other hand, attempt to enforce the government's will to improve the conditions of mining, yet they are increasingly forced to do this by affiliating with the miners' practical norms. As a strict implementation of formal mining legislation would lead to widespread closures of mining installations, their diplomatic approach includes a tolerance for illegal practices on the basis of three important aspects: 1) the impossible task to confront ten thousand miners with illegal mining praxis and the impossibility of sustaining this, 2) ARCOM officials' *in site* understanding of small-scale/artisanal miner's economic and bureaucratic difficulties to update mining installations to concur with requisites in legislation, and 3) their awareness that informal mining is widespread and deeply embedded in the tradition of mining, an acknowledgement that legitimate a slow development towards formal mining laws, i.e. a soft enforcement of the law.

Hence, in contrast to INIGEMM or central authorities like the Ministry of Mining, ARCOM officials, working as trustees and mediators between formal laws and informal mining praxis, have a closer affiliation to field sites and understand the impossibility of fully

achieving their task. Accordingly, they opt for compromises by partially respecting and recognising informal mining norms. This may be a controversial statement that several miners will refuse to acknowledge, and there are indeed occasions were ARCOM do recur to sanctions and closure, but one has to understand that this regulation praxis is a soft version of the mining legislation, and that a stricter implementation would probably make the lives of these public employees intolerable in the local setting. As noticed, however, they catalogue irregularities in order to re-connect this soft enforcement with their mandate according to the Mining Act, which in praxis means the creation of an archive that can be used to implement sanctions and free them from responsibility when accidents occur (i.e. a document describing poor conditions of the mine)[viii]. This dynamic of adaptation by both ARCOM and miners resonates with what de Theije et al say about ¨engaging legal systems¨ having different meaning and authority to different people and that, in practice, these systems (in this case: formal mining legislation and local mining norms) communicate and influence each other (2014: 131).

Another key limitation for effective governmentality in P-Z is what Murray Li observes as the refractory will of ¨men in their customs, habits, ways of acting and thinking¨ (2007: 17). This relates to Bourdieu's lessons on the concept of habitus and in the context of P-Z, how (informal) mining is embedded in local identity. I will return to this more specifically in the following chapter. Yet I also stressed this in the beginning of this chapter by referring to a quote on a wall up-town Portovelo and by my visit to a residential home with a mine inside of it. A dimension of this was also accentuated by the ¨bottom-up¨ pressure to circumvent mining legislation as ARCOM experience in their field inspections. Hence, in relation to interlegality, this chapter has provided more empirical support for the argument that regulation and control is, in contrast to critical voices emphasizing the failings of ARCOM or researchers pointing to the unsustainable praxis among artisanal miners, rather a question of the political economy in P-Z (e.g. the weight of size and scale and the internal hierarchy of labor) and the practical hurdles inherent to the governmental will to improve mining conditions (the intersection between mining legislation and the local legacy of mining).

The next chapter follows up on these observations by analysing the politics of mining in P-Z. While some of this has been touched upon already, in the next chapter I will examine this more explicitly through yet another limitation to the realization of governmentality. Murray Li briefly describes this as ¨the limit presented by available forms of knowledge and techniques¨ (17-8) and goes on to quote Hannah saying that improvement schemes must

respect ¨the integrity and the autonomous dynamics of the social body¨ (2000: 24). My interests here is not so much about what *should be done*, but rather to say something about what *is happening* (cf. Robbins (2012: 98-100) on political ecology's ¨hatchet and seed¨ and my emphasis on the ¨hatchet¨). This means to apply a critical perspective on the stakeholders that create the local politics of mining and to do this by looking at how they legitimize their positions by drawing on different epistemologies. In this perspective I explore how ¨engaging legal system¨ are founded upon divergent knowledge schemes, i.e. epistemologies, and that the politics of these cannot be reduced to the question of which epistemology is the most accurate, but rather, by following Foucault, to where these ¨regimes of truth¨ (1980:131) draw their respective power. Hence, as I will show, the politics or the problem of governance is, to a large extent, a problem of communication between these epistemic communities.

Notes

[i] This logic is replicated in the proliferation of gambling and gambling culture in P-Z and the adjacent districts. Particularly, cockfights are very popular and organized every weekend, some of them as big events with much money at stake.

[ii] See Murray Li (2007:3-4) on her own unwillingness to bridge research with development projects and on how good intentions may lead to unexpected and worsening outcomes.

[iii] This surveillance is done through ARCOM's cooperation with ECU 911 (see: http://www.ecu911.gob.ec/la-institucion), which is an integral entity that coordinates several public institutions (police, firemen etc.).

[iv] Murray Li here draws on Michel Foucault's ¨Afterwords: The Subject and Power¨, which can be found in Dreyfus & Rabinow (2014: 220).

[v] Norway's heavy reliance on oil revenues combined with its political rhetoric of resource sustainability was particularly accentuated by President Correa during the controversial decision to exploit the oil fields in Yasuni National Park. See for instance: http://www.andes.info.ec/es/politica/presidente-ecuador-es-irresponsabilidad-no-utilizar-nuestros-recursos-naturales-superar; http://www.presidencia.gob.ec/podemos-cuidar-nuestra-naturaleza-aprovechando-nuestros-recursos-naturales

[vi] For an example on IAMGOLD's operations in the ASGM district of Bella Rica, Ecuador see Velasquez (2011).

[vii] Climate and territory with all its qualities also provides limits to governmentailty and as Murray Li mentions, this resonates with the role of *actants* in actor-network-theory and the writings of Bruno Latour (1993; 2013). Although do not traced this any further, it is clear that nature responds in unforeseen and unpredictable ways when it is challenged by mining operations of different kinds. Despite the degree of precaution, this is largely outside the control of both miners and regulators as there are few studies about how many tunnels/explosions the inhabited surface can resist. Yet nature also acts regardless of this (for instance; heavy rains occasionally flooding the rivers alongside processing plants causing tailings ponds to collapse and chemical spills to occur, and as Ecuador recently experienced, earthquakes with devastating consequences).

[viii] Accidents, especially cave-ins frequently occur, sometimes due to poor investments in the mines and sometimes due to ¨the nature of the game¨ (*la naturaleza de esta industria*) as some ARCOM officials put it. Young ARCOM officials describe this as the toughest part of their work as they are among the first being noticed along with police and medical staff. Furthermore, they are obliged to inspect the site and close operations. This work, they say, involves dead bodies, communication with family members of the

deceased and sometimes, ironically, a confrontation of why they did not do anything when they knew about the conditions of the mine.

And if you have a system of allocations going
-as you always must where you can speak of change-
it will be the rates and kinds of pay-offs
of alternative allocations ***within that system***
that determine whether they will be adopted,
that is, institutionalized.
- Fredrik Barth 1967

Chapter 4: The Politics of Mining

The will to improve and the governmental ability to regulate the ASGM sector in P-Z depends, as we have seen, upon many conditions. While ASGM is sweepingly generalized across countries and continents as an activity characterized by its informal character, its (ab)use of mercury and its link to poverty alleviation (Seccatore et al 2014), the case of P-Z stands out primarily because of its peculiar history giving rise to its specific, current composition. Two components, or rather the combination of two components in this history, distinguish P-Z from other ASGM sites. First, the long trajectory of ASGM in parallel with the attempts of scaling up production through different governing regimes. Second, the early industrialization of the mining sector, i.e. SADCO and its legacy. This combination has had a significant effect on the formation of local identity, the habitus of mining and the way mining regulation is conceived locally. It creates a story of the current situation, a story in which narrative elements are modified, adjusted or accentuated according to the context of application. Similarly, regulative authorities conduct their work according to an understanding (a story) of the current situation of ASGM in P-Z. There are distinguishable *frontstage* (in

contexts like the inspections in the previous chapter) and *backstage* (ARCOM's office or mines/processing plants without the presence of regulators) features to this which could be theorized through the writings of Erwing Goffman (1959). Yet, instead of venturing into social-psychology, this chapter seeks to examine the role of knowledge in this controversy. More concretely, I am interested in how different regimes of knowledge guide the stakeholders in their self-identification and in their confrontation with other actors.

Put differently, we can say that underpinning the accounts of the current situation of regulation and mining politics in P-Z, there are claims about the objective truth of this situation, claims that reflect different epistemologies among the stakeholders. For instance, the scientific community informing governmental authorities on the environmental degradation, applies a natural scientific discourse that claims to provide for an objective and ¨realistic¨ description of the eco-system in P-Z and how mining affects this (cf. Robbins 2012: 97). Local miners on the other hand, apply an experienced-based explanation[i] on the current situation, in which the naturalization of gold mining is an inherent element, and regulation is conceived as an obstacle towards a legitimate means of subsistence. There are commonalities between these ¨habits of thinking¨ (139), for instance about the processes to extract gold from the ore, yet there is a major difference in the target for setting this knowledge into motion (i.e. scientists aiming towards regulation while local miners aiming to produce capital, albeit in very different degrees).

Contrastingly, from a political ecologist perspective with an inclination towards the social constructivism of nature/environment and its meaning, the story of ASGM in P-Z as an account of environmental degradation can essentially be conceived as a ¨struggle over ideas about nature, in which one group prevail not because they hold a better account of a process…but because they access and mobilize social power to create consensus on the truth¨ (Robbins 2012: 127). This correlates with Foucault's lesson that *truth* is a mundane matter and an effect of power rather than an objective fact derived from empirical observation (70). It is worth quoting Foucault on this point:

> Truth is a thing of this world: it is produced only by virtue of multiple forms of constraints. And it induces regular effects of power. Each society has its regime of truth, its general politics of truth: that is, the types of discourse that it accepts and makes function as truth. (1980:131, in Robbins 2012:70)

The implication of Foucault's insight is a relativity of the epistemological foundations of stakeholder's moral claims to what gold mining is and should be. But of course, this type of claims is always political, i.e. imbued with a normative agenda. In relation to Foucault's

words it is, for instance, possible to observe that the operating ¨regime of truth¨ in P-Z has avoided the recognition of environmentalism as a discourse of truth. Scientists and policy makers on the other hand, work according to authoritative wisdom from natural science and struggle to accept the practical knowledge of local miners.

This chapter seeks to untangle the claims of stakeholders and examine how they interact. I will do so by presenting a sequence of three empirical accounts that serve to illustrate this point of departure. The first account emphasizes the institution of informal gold mining, where the use of mercury is an integral component today as it has been for at least 400 years. This account also illustrates how religious faith may be part of the morality of mining. The second account exemplifies the collective efforts of the mining community to oppose regulations and external interference with local mining praxis. The third account illustrates governmental representatives' efforts to engage in capacitation and training of local miners. A commonality through this sequence is the controversial use of mercury, which is currently receiving global attention among scholars, activists and politicians in touch with ASGM.

Yet, before I turn to these empirical stories, some more theoretical reflection on the issue of knowledge and worldview is addressed in the following section. In particular, as I have explicitly identified this thesis as a work in political ecology, I wish to ground this approach in the history of ideas to illustrate that beyond political ecology's roots in Marxism and cultural ecology (Robbins 2012: 25-48), there is a certain world-view emerging from dominating ideas and authoritative exponents. Hence, in self-reflective terms, this points to the conditionality of this scholarly tradition that profoundly and necessarily shapes its approach to study social phenomena (in analogy with other disciplines or other people's thinking about the world). I will be brief on this, and although it is a side-track to the analysis at hand, I regard the self-reflective element as important in the exercise of de-constructing other views of the world because it underscores that my view is also a situated perspective indeed.

On worldviews, ontologies and epistemologies

The Oxford dictionary[ii] defines ¨ontology¨ as: *the branch of metaphysics dealing with the nature of being*. ¨Epistemology¨, on the other hand, is defined as: *the theory of knowledge, especially with regards to its methods, validity, and scope, and the distinction between justified belief and opinion.* At first glance, ontology and epistemology are clearly two

different concepts, the first dealing with the nature of being and the latter with the theory of knowledge Still, it might be argued that they go hand-in-hand since an ontological statement hardly avoids an epistemological justification and vice-versa.

If we consider political ecology's claim of nature as socially constructed[iii], Robbins links this back to Kant's metaphysics, which proposes that ¨our ideas do not conform to the objects of the world around us but that, rather, objects are constituted by the world of our ideas¨ (Robbins 2012:123). The statement indicates an anthropocentric ontology that places humanity in an extraordinary-objective position rather than accepting the material conditions as constitutive to human existence within the world. This marks the beginning of what Tim Ingold claims to be: ¨…the notion of the *global environment*, far from marking humanity's reintegration into the world, signals the culmination of a process of separation¨ (2008:462, my emphasis). For phenomenologists like Ingold, this illustrates a move from conceiving the environment as ¨a lifeworld¨ to ¨a globe¨ where humans obtain an outsider's perspective and thereby a shift in ontological orientation (463). The consequences are profound and it might be argued that this sets the grounds for the Enlightenment and the whole idea of human domination of nature.

According to Descola (2013), the separation of humanity from nature began in the Christian-Judean 17th century Europe where the meaning of God also changed with the emergence of scientific explanations. It was paralleled and presumably deeply enmeshed in the separation of the mind from the body, i.e. the Cartesian dualism. Yet, God was still highly present at this stage and Descola emphasizes how great thinkers such as Bacon, Descartes and Spinoza created a trend where God´s ¨finalist convictions¨ was substituted with God's role as an organizer, which again legitimized an analysis of nature (Descola 2013:68-9). Spinoza would still maintain a belief in universal determination, but: ¨[W]hat now came into existence was a notion of Nature as an autonomous ontological domain, a field of inquiry and scientific experimentation, an object to be exploited and improved…¨ (ibid.). Referring to Foucault and *The Order of Things,* Descola underlines that the emergence of the modern concept of ¨Man¨ was a consequence of this, and furthermore that the dichotomy between ¨Man¨ and ¨Nature¨ is unparalleled in human history (70).

In opposition to Kant's metaphysics and radical social construction, Martin Heidegger and later on Pierre Bourdieu, propose a more social ontology[iv]. These two authors also share a critic of the Cartesian dichotomy and suggest that:

…as individuals we are *thrown*: we come into a world not of our making. This world polarizes us, mediates and constrains our understanding of ourselves in it. We *exist* in it, first and foremost, and it is "existingly" – through our traffic or engagement with the things and with others in the world – that we arrive at this understanding… (Weiner 2001:5)

For Heidegger, the existential analytics, i.e. what human nature *is* and how we relate to the world, is the ontological exercise that should come prior to studying social phenomena. In this sense: "ontology then becomes the excavation of epistemology" (Weiner 2001:3) where our assumptions (as researchers) needs to be properly addressed. Similarly, Bourdieu (1977) is very much concerned about the conditions in which ¨objectivity¨ is (re) produced, not only as a focus for study, but also in a self-reflective manner (epistemologically).

It can be argued that this outline is highly Eurocentric, but the point here is to notice how a shift in ontology (the perception of *being*) led to a whole tradition of epistemological explanations (the Scientific Revolution and onwards) and not the other way around. We might add that the coupling of science and secularism has undermined the explanatory power of religion, yet as I will briefly illustrate below, this is not necessarily the case[v]. Moreover, knowledge is but one component in the politics of identity which articulates differently in different places, and indeed differently in specific places as well.

Hence, it is a tough treat to generalize on *one local worldview* in Portovelo-Zaruma. As in most communities throughout Ecuador, and the world for that matter, in 2016 we can at best talk about some kind of *glocal* soup of identities. Still, there are local trademarks and specificities about a place that works as constituents in a collective, local identity which reflect a way of seeing and identifying with the world. Moreover, local identity is shaped by both commonalities (adaption and assimilation) and contrasts (response and autonomous-movements) with neighbouring communities and its exposure to other cultural influences (e.g. Incan/Spanish/North-American hegemonies in P-Z). And, as this thesis has accounted for sofar, artisanal gold mining is a key constituent in the politics of identity. Not only has mining been a centrifugal force for livelihood orientation, the history of P-Z shows us that the continuity of mining even exceeds fundamental markers of identity such as Catholicism and the Spanish language.

Nevertheless, P-Z is not alone in this sense. There are many ASGM communities throughout the world and in technical terms, we pretty much know what they are up to (Telmer & Veiga 2009). Yet, each and every one of them are situated in highly diverse cultural and political conditions (independent variables) and accordingly articulate themselves differently. Hence we can conceive ASGM as a commonality (dependent variable) for all

these societies, where the independent variables work as modifiers. Or we can see it the other way around, for instance by zooming in on the province of El Oro and conceive cultural and political conditions as shared (dependent variables) and the particularity of ASGM as an independent variable, i.e. as a modifying force.

Both ways to conceive this arguably have something to them; the gold mining community of P-Z differs profoundly from the gold mining communities in Mongolia (High 2014) but also from the fishing communities in the mangroves outside the city of Machala (to use a ¨local¨ example). At the same time there are important similarities in both cases. Despite the differences among Mongolian and Ecuadorian gold miners, they both deal with the same substances/commodities in their daily work and face similar challenges. Likewise, the fishermen in the mangroves and the miners in Portovelo share numerous socio-cultural attributes (language, religion, citizenship etc.). My point is not to enter a discussion of universalism and particularism, but rather to conceptualize the limits of gold mining as an independent or a dependent variable. When addressing the question of a local worldview in P-Z, we could accordingly ask if a third-generation miner from Portovelo, who has worked all his life in the mines, has a worldview that resembles that of the Mongolian miner or the Ecuadorian fisherman? Surely, the heavy influence of language and religion will overshadow the praxis of mining and thus incline the probability of sameness towards the Ecuadorian fisherman. However, in ontological terms, there might be more sameness between the miners compared to the fisherman who has lived all his life by the sea. The miner from Portovelo and the miner from Mongolia are likely to share several cognitive patterns as they perform their work in their respective mines and share an extensive amount of embodied knowledge (the habitus of mining). They probably also share notions of purpose as to why they (continue to) mine for gold (economic rationality) and an orientation towards the mountain, in contrast to the fisherman who orients himself towards the sea.

If we think of this in the light of epistemology, we might imagine how the three of them (the fisherman and the two miners) share the feature of practical wisdom as the basis of their daily work. On a general level we can conceive this as a dominance of *knowledge how* to mine for gold and *how* to fish, in contrast to *knowledge that* explains the chemical/technical processes involved. In the context of ASGM in P-Z there are several knowledge schemes at play simultaneously, including overlaps that create both frictions and cooperation[vi]. These knowledge schemes can be systems of classification resonating with different moral grounds (e.g. the divergent attributes given to mercury/cyanide among miners vs. people external to the mining context) or knowledge reflecting different rationalities about the human relation to

nature (e.g. local vs. external views on the (ab)use of the environment). For instance, the large bulk of informal/illegal mining is very much based on acquired practical knowledge and low budgets (subsistence mining) that thwarts the possibility of compliance with regulations. In contrast, there are small-scale miners that have been formalized and currently work, albeit in varying degrees, along the lines of regulations by profiting on entrepreneurial adaptation (economic-legal knowledge). In this segment, the practical knowledge of ¨how to mine¨ is likewise, arguably confronted with state regulation that is very much based on knowledge of ¨what mining is supposed to entail¨ (largely derived from a scientific-academic, epistemic community). Yet, the outcome, as I illustrated in the previous chapter, is far from given, but propagated as a win-win situation where environmental impacts are mitigated and revenues for the mining operators increased. The point here is that whilst both of these epistemic communities have normative and political dimensions that are coupled with economic and environmental arguments, they are qualitatively different in relation to the question of what gold mining *is*, and epistemologically different in relation to the knowledge/theory that guides their approach.

A more radical take on this emerges in contexts where questions of resource governance have to deal with divergent ontologies on what the world, or the universe for that matter, is. Law (2011) explores this by making a point that Australian Aborigines (alongside, yet emphasizing their *particularity*, other indigenous groups) simply have a very different world-view compared to conventional Western thought (emerging from the history of ideas outlined above). In fact, the difference is so great that it resembles an incommensurable difference. Hence Law asks:

> Is it simply that people *believe* different things about reality? Or is it that there are *different realities* being done in different practices? If the first of these positions is right, then we're in the business of beliefs, perspectives and *epistemologies*. If it's the second then we are backed into issues of *ontology*. Here's the analytically radical nature of this second position. We are in the business of treating reals as *effects of contingent and heterogeneous enactments, performances or sets of relations*. (2011:2, italics in original)

Law's point is that the Western (hegemonic and imperialist view) ontology of a ¨one-world-view¨ that separates humans from nature is politically imbued because it colonizes and suppresses other, well documented, multiple ontologies, and he actually portray this encounter as ¨catastrophic¨ (9). From a slightly different angle, this is also the starting point for thinkers such as Arturo Escobar (e.g. 2008), Marisol de la Cadena (e.g. 2010) and several others[vii]. Yet, as mentioned both here and in the introduction of this thesis, the business of divergent

ontologies become clearer in post-colonial contexts that includes the ¨indigenous element¨, although not necessarily (as Law emphasizes, this is also a problem within the ¨North itself¨ (2011:11)), and henceforth I limit myself to speak of epistemological differences. That is, I assume (or reduce) the question of different realities to be shared as a ¨one-world-view¨ among the stakeholders in P-Z.

In the following I turn to illustrate the most rudimentary mining practice in P-Z and how this articulates in a specific case.

The habitus of informal mining

There is a mining museum in Portovelo. It is situated in a hill with a view of the town's central squares and the football field below. The owner and administrator of the museum, Magner Turner, is a mineral prospector and descendent of miners with American roots. He is a well-known figure both locally and nationally and has extensive knowledge about Ecuadorian geology and the trajectory of mining. From the outset he was enthusiastic and eager to tell me about the mining in P-Z, especially its history and geological technicalities. During my stay I visited him and the museum (which is not very frequented except for weekends and holidays) several times and we had long talks about mining issues.

On this particular occasion, however, we were not alone. An Ecuadorian friend of mine was present, but more importantly there where two men panning for gold in the middle of an open area of the museum. After a brief tour around the museum we approached the two men sitting beside a big rock that was hollowed out like a big pot. Apparently, these men and the owner were close friends and they came to the museum to carry out this work, not only because of friendship, but also to seek advice and discuss the prospects of their search for gold. They did not directly use the hollowed rock, but held their metal pan with concentrated ore/sand in the space right above it. With our eyes gazing curiously at the sand in the pan, we greeted the two men, one of them slightly younger than the other. The youngest man (hereafter Claudio) was using a rock the size of a melon to crush the sand that covered the bottom of the pan. He put a lot of weight into it and it looked like hard work. Occasionally, the other man (hereafter Miguel) poured some more water into the mix and Claudio paused to have a look at the sand. He moved the pan so that the water would move around in circles and then poured away some of it before he examined the heaviest particles that gathered towards one side of the bottom. We all saw the glimmers, but unlike them, my friend and I could hardly distinguish gold from other minerals.

- Hmm…it doesn´t want to let go right?, said Claudio.

- We have to continue grinding, said Miguel. [1]

Claudio continued the laborious task of pressing the rock against the sand in the bottom of the pan. The conversation went slow in the beginning. Both men were hesitant and only gave very brief answers to our questions. As we got to introduce ourselves properly, that is; as we explained the purpose and intention of our presence, the two men dropped their shoulders and talked more freely. This effect was utterly enhanced when the owner of the museum confirmed and commented upon my research plan. Until then, the two men had not said much about what they were doing. Now, they explained that they were panning this material as a test to see if it was worthwhile to exploit larger quantities of the same material. I asked them where they had found this sand. Miguel, probably in his mid-forties, poured some more water into the pan while he answered;

- In a river far from here...

- Yes, we are doing this because my friend here got an idea to extract two kilos (of gold) and time will show if we can find something, commented Claudio.

- Are you doing this all by yourself? asked my friend.

- Yes only the two of us, and properly armed of course, replied Miguel.[2]

He then continued to say that they had walked several hours to find the spot where they dug out the sand they were now testing. Sometimes, he said, these walks could even stretch over several days. He also commented upon the dangers involved in these hikes because people (*la gente*) are highly observant and talk very outspokenly (*habla mucho*) about gold diggers. I could not resist my curiosity to ask if it really was necessary to carry weapons for protection. Miguel looked at me very seriously as to make me understand the realities involved, before he calmly said that:

- If someone is going to kill you, then you're only left with the choice to kill him before he kills you.[3]

He told me this in such a tone and with such an expression in his face that he almost convinced me that he had actually experienced this kind of situation.

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1 - *Hmm…no quiere salir verdad?,* dijo Claudio.
- *Hay que seguirle dando,* dijo Miguel.

2 - *En un rio muy lejos de aquí…*
- *Si, estamos haciendo esto porque se le metió la idea de los dos kilos (de oro) hace unos seis meses y vamos a ver si encontramos algo por ahí*, comentó Claudio.
- *Y van solo los dos?*, preguntó mi amigo.
- *Si solo los dos y vamos bien armados pues*, respondió Miguel.

3 - *Si alguien te quiere matar, pues, no te queda otra que matarlo primero*.

- Shit, this sounds quite heavy, I responded.

- Well, that's how it is down here, people kill for gold, we don't, but we have to be very careful, Miguel responded[4].

He told us that he did this with Claudio because he fully trusted him. He also told us that they were very careful not to talk about their doings to anyone else (although they did talk to us about it!) out of fear to create gossip and attract competitors.

Once more they paused to examine the sand for gold. Claudio repeated the same movements with the pan; the water moved around and around and he spilled it out along with some of the non-valuable material. Then he pointed at the glimmering particles in the sand and told us that these were particles of gold. He explained to us that the gold was trapped inside the sulphur grains. Accordingly, the reason why he crushed the sand with the stone was to release the gold. Admittedly, they had also added mercury to capture the gold although they began the conversation by calling mercury for ¨chemicals¨ (*químicos*). Evidently, this was because they were dubious about our agenda given the fact that the governmental prospect of a mercury prohibition was on the lips of everyone in P-Z during these days. After some more panning, Claudio gathered a tiny droplet of amalgam, i.e. a mix of gold and mercury, and moved it around with his fingers. It was very liquid in its consistency, mostly resembling the properties of mercury.

- Isn´t it dangerous to touch the mercury like that?, I asked.

- Naah, nothing happens. If you drink it, on the other hand, you will have a serious problem), Claudio answered[5].

They both looked at the amalgam in the bottom of the pan, a bit disappointed.

- We have to keep on grinding a bit more I think, said Miguel[6].

The owner of the museum came around and Miguel addressed him saying:

- This gold is really misbehaving; it just doesn't want to be released.

- Misbehaving indeed, confirmed Claudio, as he continued the work with the stone.

- Yes this material has a lot of sulphur in it, said the museum owner[7].

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4 - *Mierda, esto ha sido cosa seria entonces,* respondí yo.
- *Claaaro, así es la cosa aquí, la gente mata por el oro...nosotros no, pero hay que tener mucho cuidado*, respondió Miguel.

5 - *Y el mercurio, no les hace daño al tocarlo así?,* pregunté yo.
- *No, no pasa nada. Ahora si te lo tragas ahí si estas fregado*, respondió Claudio.

6 - *Hay que seguirle dando un poco mas creo*, dijo Miguel.

7 - *Ha sido malcriado este oro, no quiere salir*.
- *Malcriadísimo*, confirmó Claudio mientras continuaba el trabajo con la piedra.
- *Si tiene muchísimo sulfuro ese material*, dijo el dueño del museo.

They told us that what was left in the pan by now was the extract of a bag of 15-20 kilos of sand material and that they had worked with this for two whole days. The use of the word ¨malcriado¨ (here I translate it to ¨misbehaving¨, but literally it translates into ¨badly raised¨) when referring to the gold was new to me. ¨Malcriado¨ is typically invoked when referring to a child that behaves improperly. It may raise a somewhat comic contradiction when parents refer to one of their children as ¨malcriado¨, but this is part of daily speech and goes by without much reflection. Nonetheless, when referring to the gold as ¨malcriado¨, Miguel was referring to the particularity of this gold to remain hidden/trapped in the sulphur despite all the efforts invested by him and his companion. The gold simply did not behave the way it should.

The two men were dubious about the promise of this material. As mentioned, they had spent two days panning and several weeks exploring a riverbank in a secret hinterland. Subsequently, they had carried test material, probably disguised by the darkness of the night, a long way. All this effort meant that there was a good portion of hope mixed into their doubts about its profitability. Miguel's plan was to collect two kilos of gold and he was to dedicate another six months to explore and search in the rivers of the region. With two kilos (approximately amounting to 70 000 dollars given the gold price at this time), he said, he could build himself a decent house. Meanwhile, in relation to the comments of the gold being ¨malcriado¨, Claudio told us that:

> - The gold is a jealous thing. If you go out to look for it with too high ambitions, you're not gonna find anything. Even worse if you have any bad intentions. One has to go with a clean heart.[8]

He then told us of his father who had been a miner for a lifetime and a person that found considerable amounts of gold, yet spent it all in the ¨life of liquor and women¨ (*la mala vida de trago y mujeres*). This lifestyle, he said, had destroyed his father and been devastating to his family. He continued by asking us how old we thought he was, whereby we responded ¨around 25¨. He said that he was 32 years old but maintained himself so young because he did not smoke, drink or take any drugs. He told us that he had overcome that period in his life.

At this point in the conversation the two men began to reveal their religious inclination towards a Pentecostal church with local footings in the community. Miguel actually told us that he was a preacher of this church and had been for the past two years. Claudio and the owner of the museum were both followers of the same church. Their faith consisted in two

clear dimensions; the first was their declaration of having left their old lives of wrath behind, meaning that they had abandoned the materialistic pleasures of wealth along with refraining from alcohol, drugs and tobacco. These were, not surprisingly, sinful acts according to their new texts (*los textos*). The other notable dimension to their religious convincement was that of a prophecy. This prophecy was about the days of doom that were closing in and virtually were almost upon us by now. In this scenario God would separate ¨good and bad people¨, rewarding the former and punishing the latter. My friend and I went along with this conversation, a bit aloof, but respectfully listening to their talk. Yet, perhaps because of a felt distance or the lack of religious resonance, Miguel and the owner of the museum complemented their talk about the prophecy of doom by referring to the discourse of global warming and scientific announcements of global climate change.

> - At this point everyone knows, even the scientists. The world is coming to an end and time is running out, said Miguel[9].

I did express some degree of agreement on this statement, that is; I confirmed the scientific consensus on global warming, but I also marked my distance to the religious components in this belief. It felt right to do this because what had started out as a smooth conversation was now markedly changing character into a religious and increasingly intensive monologue. The owner of the museum felt our distance and subtle scepticism and remarked that it had taken him ¨many years to be convinced by the holy texts¨. We then somehow managed to pull the conversation back to the gold in the pan.

By now we had spent three hours talking. During this time the two men had continued to rub the sand material in the pan. They had occasionally paused to have a look at the quantity of gold-mercury amalgam, but continued working with the stone, convinced that it was possible to press out more gold form the sulphur grains. Towards the end it was Miguel who carried out the work. Claudio poured some more water into the pan and once again they revised the sand in search of gold. The size of the amalgam droplet had grown. Claudio picked it up between his fingers, although it tended to disintegrate as in the previous occasion. He then pulled out a cloth (a piece of a cotton handkerchief), which he used to squeeze the little drop of amalgam in order to remove water and some of the mercury. It somehow failed to filter properly and he complained that the cloth was not the appropriate one. Still, he held this little ball of amalgam between his fingers saying:

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8 - *El oro es celoso. Si uno busca con demasiadas ambiciones no va a encontrar nada. Peor si uno tiene malas intenciones. Hay que ir nomas con el corazón limpio.*

9 - *Ya lo saben todos, incluso los científicos. El mundo se viene abajo y se acerca la hora*, dijo Miguel.

- Well, we got something in the end didn't we?

- Yes, but this gold is misbehaving indeed, no wonder why people don't exploit it. They ought to know by now, said Miguel referring to people who would have exploited this material if it had proven to be rich in gold[10].

There was an atmosphere of slight disappointment, somehow balanced by statements like: ¨well, there is undoubtedly gold here, that´s for sure¨ and ¨if there had been a little bit more (gold) I wouldn't have hesitated at all¨[11]. The owner of the museum who ventured around back and forth between his house and our spot, asked to see ¨the small ball¨ (*la bolita*) upon which he said: ¨ah, this ball doesn't contain more than about two grams¨.[12] As to conclude, despite the hopes of the two men, they seemed to reconcile themselves with the fact that this material did not hold very much promise for any further exploitation and that they would have to continue searching somewhere else. With that conclusion we withdrew from the museum and the company of these adventurous men. We said good-bye and good luck in their future search and strolled down to the town centre where we caught the local bus up to Zaruma.

In this case, Claudio and Miguel relied on manual alluvial gold mining, a technique that is even older than the subterranean extraction of ore from tunnels which is characteristic for the mining in P-Z. Still, the manual process of recovering gold from ore with the use of a pan, a stone to grind the material and mercury to trap the gold, is the same regardless of its extraction in a mountain or a river. The only difference is that ore from the mountain must be milled to become a sandy material. Anyway, manual alluvial gold mining is an ancient technique, only modified by the introduction of mercury in the early 17th century, which also implies the burning of the amalgam and the problematic mercury release into the environment. Yet, in this context, the environmental concern was hardly a subject. Mercury was rather conceived as a natural ingredient to this process, much like adding salt to food. Here, the use of mercury as salt was not critically addressed; it serves an important function and it works - today, as 400 years ago.

Besides accounting for some of the particular beliefs that accompanied Miguel and Claudio in their search for gold, this story represents the institutional traits in the habitus of artisanal mining. The illegal aspect of this, however, is of course due to the recent legislation

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10 - *Si salió algo no?*
- *Si, pero esta muy malcriado este oro, con razón que no están sacando nada de ahí, yo lo saben esos manes*, dijo Miguel refiriéndose a gente que hubiera explotado este material si fuera rico en oro.

11 - *Bueno, pero si hay oro, de eso no hay duda.*
- *Con un poquito mas (de oro) no hubiera dudado.*

12 - *Dos gramos nomas ha de tener esa bolita.*

placing this institution at the margins of the law. Hence the habitus exceeds, by far, the governmental attempts to criminalize it, and it constitutes a prototype that works as a key symbol (Ortner 1973) in local identity.

Sherry Ortner enlists several indicators on how to identify key symbols within a culture (ibid.: 1339), but basically what we are talking about here, are indicators that point to a focus of interests and appears in many contexts (which corresponds to mining in P-Z). Yet, Ortner also makes a distinction between summarizing and elaborating symbols, in which the former is a symbol holding local integrity and respect that synthesize and ¨´collapse´ complex experiences and relate the respondent to the grounds of the system as a whole¨ (1344). The elaborating (key) symbols on the other hand, are ¨valued primarily for the ordering of conceptual experience, i.e. for providing cultural ´orientation´¨ (ibid.). Here, while analysing the prototype of the artisanal miner, we can actually see how this distinction somehow collapse, i.e. the artisanal miner both synthesize an array of activities and also contains a normative direction of autonomy.

Furthermore, if we see this in relation to Bourdieu's definition of habitus, we can acknowledge the deep legacy of artisanal mining, which includes:

> ...systems of durable, transposable dispositions, structured structures, predisposed to function as structuring structures, that is, as principles of the generation and structuring of practices and representations which can be objectively ¨regulated¨ and ¨regular¨ without in any way being the product of obedience to rules, objectively adapted to their goals without presupposing a conscious aiming at ends or an express mastery of the operations necessary to attain them and, being all this, collectively orchestrated without being the product of the orchestrating action of a conductor.¨(1977:72)

It might be argued that Claudio and Miguel had a very clear intentionality upon doing what they were doing, but the point here is that they enacted a form of mining that represents a ¨structured structure¨ that lies latent within the communities of P-Z. It does not need any internal explanation upon being enacted, it is internalized a long time ago, reproduced on an everyday basis, and it is what I refer to as habitus of informal mining that can be juxtaposed with the prototype of the artisanal miner.

What should also be noticed here is that this habitus/prototype emerged even before regulation became an issue (before the Incan rulings in the 15th century) and that it has been sustained and consolidated at the margins of regulations ever since. Henceforth, it has an intrinsic element of opposition to it. The next account displays the use of this prototype as a powerful imagery to mobilize and unite the mining community to oppose and confront the regulations that threaten its existence.

Political mobilization

On the 23rd of July 2015, there was a demonstration on behalf of the mining community in Portovelo. The demonstration was organized by APROPLASMIN (association of owners of processing plants) and consisted of a peaceful march through the town, a stop with an appeal outside ARCOM's offices, and in the end a press conference outside the office of APROPLASMIN. Approximately two thousand people showed up. Not only miners, but all sorts of people – merchants, restaurant owners, shop keepers, chauffeurs and housewives - from the local communities were present to show their support. The event was covered by local newspapers and radios, as well as national TV channels (Ecuavisa, Canal Uno, RTS), and got considerable attention. The protest addressed the issues of regulation and control. More precisely the demonstration represented the mining community's complaint on: unfair closures of several processing plants, camera surveillance, bad conduct by ¨certain¨ ARCOM officials, the lack of feasible alternatives to the use of mercury, lack of progress to implement a tailings-pipeline (*arenoducto*), a sense of un-just privileges given to the largest operators, and the failure of ARCOM to stop the continuation of mining (i.e. detonations) underneath the city of Zaruma[viii].

Prior to the demonstration I had been in contact with Danilo Castillo, the head of APROPLASMIN, who invited me to come along this day. Besides leading the most important mining association in the region, this man is also a councillor in the municipality of Zaruma *and* an owner of a processing plant. Accordingly, he is very much involved in the politics of gold mining, albeit from different positions. Moreover, through APROPLASMIN he is involved with both national and foreign university collaborations with or without links to INIGEMM. Castillo was open and friendly, but understandably a busy señor.

The march was to commence at ten am at the roundabout where the two rivers, Amarillo and Calera, unite. Predictably enough, there were some delays, but the march began only a few minutes past schedule. However, many people had arrived early and at the moment when I arrived, it was difficult to find a place with shadow. Hence, the equatorial sun was slowly consummating us while we waited for the action to take place. Street vendors took advantage of this, selling refreshments, ice cream and sodas. I even noticed some people having cold beer during this morning hour. People were mingling around, but for the most part standing together with their fellow companions. The miners and the processing plants workers wore their helmets and rubber boots making them very easy to identify. Many also

wore a t-shirt with the name of the mine/processing plant where they worked, while others wore shirts with some kind of pro-mining slogan. Everyone however, were informally dressed, even the leaders of the march. This was undoubtedly part of the strategy (as well as a practical relief!) as the multitude was to represent and symbolize the working class of the region and in some way making a distinction between them and the uniformed authorities who control them.

As the march began, the narrator of the day began to repeat three, four messages through a megaphone while sitting in a pick-up truck equipped with two large speakers in the back. He introduced the multitude to the slogans of the day that were shouted repeatedly throughout the march: ¨unified miners will never be defeated!¨ and ¨he can be seen, he can be felt, the miner is present¨[13]. For anyone slightly familiar with Latin American history, they will know about the roots of socialism and its revolutionary movements. The first slogan above is a derivation of the lyrics in the song written by the Chilean Sergio Ortega: ¨el pueblo unido jamás será vencido¨, which has been a consolidating protest song for many working class movements in Latin America. It is also used world-wide in all sorts of mass-demonstrations. Its origin, however, is the political context of Chile in 1973, prior to the coup d'état of Pinochet overthrowing the government of Salvador Allende. The second slogan (*Se ve, se siente…)* is also widely used in public protests, at least in Latin America, and as with the first one, the word ¨pueblo¨ (literally translated to ¨town¨, here meaning ¨people¨) was effectively substituted with ¨minero¨ (miner). In between these punch lines, a recurrent mantra was also: ¨Hail the mining!¨ (*Que viva la minería!*). This was typically shouted out by the narrator or someone else taking initiative and subsequently echoed by the crowd.

The use (reproduction) of these slogans was very much expected. In fact, they are almost obligatory in events like these. People expect them and it facilitates the collective shouting and singing. Importantly, it also connects this particular protest with a long tradition of class struggle in Latin America. In this way it brings in an element of legitimacy that resonates with the historical, moral grounds of most people attending. People related to this and rapidly began to participate in the shouting. In analytical terms we may observe that the *form* of the demonstration (predictable and efficient) worked to enhance the *message* coming across as it had a boosting effect on people's self-identification with the cause. This developed collectively as people observed each other.

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[13] *Mineros unidos jamás serán vencidos!*; *Se ve, se siente, el minero esta presente!*

The march was well underway and the atmosphere was good. Although people, especially some of the women, continuously shouted the slogans and probably woke up with a sore throat the next day, the mood of the crowd was far from aggressive. Rather, it was surprisingly easy-going, perhaps due to the fact that there were very few outside spectators during the first kilometres without any settlement except for a few mechanic workshops and some car repair shops. Yet, whenever the front group observed the TV cameras, they increased their intensity, an act that spread backwards in the crowd.

After about 40 minutes, the protesters (including myself) reached the first bridge, crossing the Amarillo River. At this point the leaders instructed the crowd to stop. The truck with the narrator managed to pass through the multitude to become the march's arrow spear crossing the bridge. The bridge was also the gateway into the urban area of Portovelo with houses, buildings and importantly; spectators. The crowd followed the truck repeating the same slogans again and again, with increased passion at this point. After the bridge, the crowd continued straight ahead for another two blocks. The leaders and the media used the opportunity to take pictures, as this was one but few places where one could get a glimpse of the entire crowd in one stretch (about four blocks long). We then turned left and after some five, six blocks the march reached its first and most important destination; the ARCOM headquarters. As previously mentioned, ARCOM had their offices on the fourth floor of a relatively modern building situated on a corner with a view down on a crossroads. The crowd filled up the streets with the pick-up truck in the middle of the junction. It was time for the first speech of the day – a petition directed at ¨unfair regulation¨ conducted by ARCOM officials that were now hiding behind closed doors and windows. Castillo gave the speech and was enthusiastically supported by the crowd. His approach was rather diplomatic, as he appealed for dialogue and collaboration before pending over to a voice of complaint and finishing off with firm words of protest and demands of integrity on behalf of all the people that had showed up. The crowd shouted in his support, but there was no physical aggression at play. The most controversial act was perhaps a group of men shouting: ¨No more bribes, no more bribes!¨[14]. Castillo appealed, several times, for the ARCOM officials to come out, but without any luck. Still, they undoubtedly got the message. Although the protesters were not directly threatening, it would have been a very difficult undertaking for ARCOM representatives to enter the debate at this stage. In fact, Castillo later told me that there had been meetings between APROPLASMIN and ARCOM during the days prior to the

[14] *Ninguna coima mas, ninguna coima mas!*

demonstration and that the latter had promised to reverse several plant closures. Yet, APROPLASMIN had by then mobilized people throughout the province's highlands (*la parte alta*), and accordingly the urge to protest was too great as to cancel it in the last hour.

In the end, after about 30 minutes outside the ARCOM headquarters, the march continued up towards the town centre. On our way we crossed the Amarillo River once again, on a different bridge further upstream. We passed through the town centre and continued past the football field to end up just in front of the office of APROPLASMIN. People in the crowd continued to shout enthusiastically while the organizers set up the sound system for the following press conference. Once again, Castillo took the word, representing the mining community. The speech was quite similar, albeit a bit longer, to the one he gave in front of the ARCOM offices. Likewise, he started off in quite diplomatic terms, but then increased the loudness of his voice as he shouted out complaints, punch lines and utterances speaking the minds of the miners surrounding him. Importantly in this regard, Castillo explicitly mentioned the name of ELIPE as a company that, by profiting on their size, scale and government alliances, threatens to expand their dominance in P-Z. This was an efficient rhetorical move because it drew the line between us (local mining companies/cooperatives including artisanal miners) and them (large, external operators), as it resonated clearly with the hegemony of SADCO and the sense of marginalization among artisanal miners. More generally, Castillo alternated between directing himself to the President of the Republic (facilitated by media coverage) and the multitude in front of him. The following statement was part of his speech:

Where is INIGEMM comrades? Where is the alternative for using mercury, comrades? That kind of collaborators, Mr. President, are those who make the Citizen's Revolution look bad…That kind of entities who have simply transformed into a series of well-paid stage dolls!…because down here (in Portovelo) they have not proposed any solution!…and if someone can prove the opposite, here or anywhere in the country, please feel free to do so... Where is the alternative for using mercury? And please don't come and tell us that: ¨you have to apply flotation, you have to apply cyanidation…¨ Among us there are miners that have been mining since they acquired the ability to reason!...and we Know that flotation works until certain densities, and we Know that cyanidation works up to a certain point…But what about the ¨free¨ gold? What about the coarse gold that is left in the pans? That´s the question we want to resolve technically! And that is an obligation for the ones who arrive here to propose solutions, but instead transform themselves into just another problem.[15]

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[15] *Donde esta el INIGEMM compañeros? Donde esta la alternativa para no ocupar mercurio compañeros? Ese tipo de colaboradores, señor Presidente, son los que están haciéndole quedar mal a la revolución ciudadana. Ese tipo de entidades que lo que simplemente se han convertido en una serie de pipo-tascos, por que aquí no han planteado las soluciones, caso contrario que lo demuestren, aquí o en cualquier parte del país. Donde esta la alternativa para no ocupar el mercurio? Y no nos vengan; que hay que flotar, que hay que cianurar…aquí hay mineros que venimos haciendo la actividad desde que tenemos uso de la razón y sabemos*

The statement was followed by the crowd shouting: ¨That is the truth, that is the truth!¨[16], before he continued his speech. Point by point, Castillo highlighted the arguments that comprised the background for the demonstration. Meanwhile, his statement on mercury sheds light on several important aspects. He started off by mentioning the absence of INIGEMM. Then, by emphasizing the lack of alternatives for the use of mercury, he accentuated its importance for artisanal miners and blamed INIGEMM for not coming up with alternatives. With this point of departure, he directed himself towards President Correa to emphasize the uselessness or even worse; the hypocrisy of this entity that, in the collective mind of the multitude, does not contribute towards any solution. Then, and this is perhaps the most important issue, he indirectly referred to prior situations where miners have been told (by representatives from INIGEMM) to use flotation and cyanidation instead of processes involving mercury. This ¨advice¨ was interpreted as a major provocation as it questioned the knowledge and capacity of the local miners that, according to Castillo, have dealt with these questions ever since they acquired the capacity to reason. He then fired back, saying that they *know* that flotation works until a certain point and that they *know* that cyanidation works until a certain point, but, and this is a collective worry among the great majority of local miners; what about the situations where mercury is considered to be the most efficient technique (implicitly referring to the business with artisanal miners described in chapter 2, that is, situations where artisanal miners arrive to process small amounts of ore with course gold). What are the available techniques to replace the use of mercury in these situations? This and precisely *this*, was what the miners asked in the face of a prohibition on mercury. As for now, Castillo said, INIGEMM (implicitly including ARCOM), are merely provoking more problems by pretending to prohibit mercury without presenting any alternatives.

Most of these arguments are easily countered. At a general level it might, for instance, be interfered that it is the proprietors of any given industry, not the authorities or other institutions, which are responsible for adjusting themselves to regulations. In economic terms, the industry and its owners should cover the transaction costs of adjusting to a new reality (with a prohibition of mercury). At least, the question of who is to cover the costs should be an open question to discuss. Furthermore, many trustees, to use Murray Li's words, would

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que la flotación se da hasta cierta densidad y sabemos que la cianuracion se da hasta ciertas leyes. Que se hace con el oro libre? Que se hace con el oro grueso que queda en las ollas? A eso queremos soluciones técnicos. Eso es obligación de venir a plantear alternativas para la solución y no convertirse en un problema mas al que ya lo tenemos.

[16] *Eso si es verdad, eso si es verdad!*

have felt sorry for Castillo's description of INIGEMM as an entity that merely creates more problems. INIGEMM's involvement in P-Z has taken place since its foundation in 2009 (with the new Mining Act) and prior to this, through its predecessors DGGM (Directory of Geology and Mines[17]*)* and CODIGEM (Corporation for Development and Metallurgical Geological Mining Research[18]). Although Castillo questioned the efforts and results of this ¨will to improve¨, INIGEMM has indeed facilitated collaboration with foreign and national researchers and attracted both capital and scientific knowledge to P-Z[ix]. Surely, the great majorities of ASGM contexts do not receive similar attention.

Yet as I have emphasized quite thoroughly in previous chapters, the reasons why improvements fail to materialize cannot merely be placed on the shoulders of INIGEMM or ARCOM for that sake. What is more noteworthy in Castillo's speech and echoed in the organization of the demonstration, is the momentum of *collective* protest despite the fact that the mining community is highly heterogeneous (the co-existence of varying scales of mining operations). Castillo achieved this momentum by evoking the imagery and the preoccupation of the artisanal miner working for subsistence. As already remarked, this is a powerful local image because it draws upon the long history of mining at the same time as it underscores the normative direction of autonomy and integrity in opposition to external interference. Simply put, it portrays the situation as a class struggle (cf. the socialist slogans) between ¨us¨ (local artisanal miners) and ¨them¨ (external authorities, in this case INIGEMM as an academic elite), while obscuring the strategic position of processing plants taking advantage of the current situation. In the following account, I give the word to INIGEMM to let this entity and its collaborators balance this perspective.

The workshop - the limits of scientific knowledge

In the beginning of September 2015, UNIDO (United Nations Industrial Development Organization) in collaboration with INIGEMM, GEF (Global Environment Facility) and the Peruvian Ministry of Environment held a two-day workshop for small-scale and artisanal miners in P-Z. The workshop was held at a hotel in the outskirts of Portovelo and was explicitly about improving processing practices and gold recovery without the use of mercury. About twenty-five local miners/administrators/workers of processing plants showed up along with a group of miners from the ASGM district of Piura in Northern Peru. After the opening

[17] *Dirección General de Geología y Minas.*

[18] *Corporación de Desarrollo e Investigación Geológico Minero Metalúrgico.*

act on behalf of representatives from UNIDO and INIGEMM, it was all set up for the first presentation, which was to focus on mineralogy, methods and equipment for mineral analysis. Yet, just before it started, a local processing plant owner raised his hand and said the following:

Well, it is nice to see all of you here, but just before you start I wish to say that what we need here in Portovelo are practical and technical solutions to the use of mercury. I have been to so many workshops that theorize on mineralogy and scientific analyses and I simply do not benefit from it. We know the processes! What we need are practical and technical solutions.[19]

The comment was well-received among the audience. One of the organizers even took the microphone and said that he understood the man and that the issue he raised was exactly what this workshop was aiming to address. The first presentation then got underway as planned. The presenter was an engineer working with mineralogical analyses for INIGEMM in Quito. He did the presentation in a conventional lecture style, using PowerPoint slides. As he proceeded, however, it became clear that his content was overly technical and theoretical, a fact that resonated all too clearly with the comment prior to his presentation. Yet, it was too late to turn around and the engineer continued as planned. After about forty minutes, the man who had raised his hand and made the comment, left the building accompanied by ten local miners. Apparently they had other things to take care of. The engineer continued, and finished off his presentation. No comments were made on the observation that a third of the audience had left before he finished. There was a short break, some more coffee, and the program continued with a lecture given by a teacher from the University of San Francisco[x] in Quito. The lecturer of this presentation had apparently noticed that several miners left, and gave a vivid performance engaging the audience with questions and comments. The difference from the prior presentation was stark. Yet, in many regards it was too late, as the ones who had left were not there to experience this. Quite contrary, the ones who had left had simply confirmed their anticipated suspicion towards attending the workshop.

I do not use this example to direct a sturdy critique to the organizers of the workshop. There are many potential challenges in organizing a workshop for a diverse audience and as the program succeeded most people seemed satisfied, in particular the Peruvian group. The

[19] *Bueno, me alegra verlos todos aquí, pero antes de comenzar solo quiero decir que lo que necesitamos aquí en Portovelo son soluciones practicas y técnicas para el uso de mercurio. He estado en tantos talleres en donde se habla de mineralogía y análisis científicos y simplemente no puedo aprovechar nada de eso. Sabemos los procesos! Lo que necesitamos son soluciones practicas y técnicas.*

problem, on the other hand, is the social effect of this episode. The man who made the comment this morning is an influential person in APROPLASMIN. I had talked to him on a previous occasion and got the impression of a man who was genuinely frustrated and worried by the current situation with increased input prices and decreasing gold prices. He was also more explicit about it than others and criticized the government for monopolizing both cyanide sodium (currently only imported and re-sold by the Ecuadorian State) and dynamite (currently only issued legally by the Ecuadorian Army). These two regulations, he said, had increased operational costs considerably, and led to a proliferation of illegal trafficking of both cyanide and dynamite.

These worries resonated with the majority of the local population who felt that the economic situation was very slow and, as mentioned above, outspokenly characterized present times as ¨a crisis¨. This was the situational context for the demonstration as well as the workshop. Accordingly, the mining community was increasingly sensitive to any further regulations that would restrict their activity additionally. In this line of reasoning, it was probably with a fair amount of ambivalence that this man and his allies had showed up at the workshop in the first place. And then, with a strike of bad luck (?), the episode above occurred, and these men returned to their work to talk about this with their colleagues. The social effect thus becomes a reaffirmation of the negative impression of external actors that corresponds to the images drawn rhetorically during the demonstration described above.

The example from the workshop illustrates how good intentions may lead to contradictory outcomes, but it also points to the importance of how scientific knowledge is presented to a non-academic audience. This point was actually touched upon by the representative from UNIDO during the opening act, saying that in these settings ¨everything presented may not be useful to everybody attending¨. And indeed, confronting a diverse audience might be a difficult performance to balance. Yet, this workshop was *dedicated* to the local miners in P-Z and accordingly, the content could legitimately be tuned to them at the expense of others (e.g. organizers, researchers, bureaucrats).

In contrast to the example from the demonstration we can, in analytical terms, observe how *form* (power point/academic lecture style) served to carry the *message* of mineralogy towards an academic audience, while fundamentally failing to inform local miners. The presentation that followed, signals that this is not necessarily an incommensurable opposition, but in fact, achievable by changing the form (not necessarily the message). Thus, if we conceive the workshop as a collision of two divergent epistemologies leaning on divergent theories of knowledge and divergent rationales towards the praxis of ASGM, not only does

this resemble the problems of interdisciplinarity (e.g. natural science/positivism vs. political ecology/social constructivism), but it highlights the role of pedagogy and communication as means to narrow the gap (or prevent the collision) between these divergent ¨habits of thinking¨. In other words, there is hope, yet I argue that this is not merely a question of accommodating a scientific discourse to the language of local miners. As I have illustrated several times by now, there is an elephant in the room and it is not about the technicalities of mining, but rather about the political economy and the power relations inherent to the governance of ASGM in P-Z.

The politics of the meaning of mining

The three accounts illustrate different aspects of mining in P-Z. Meanwhile, the sequence all taken together aims to inform the reader on the logics of artisanal mining, how this is institutionalized as a local prototype that serves as a collective vehicle for local identity, how this can be used politically and how it responds to the government's will to improve. While I have so-far used Bourdieu to suggest the existence of a mining habitus that, despite cultural variations, may be generalizable across ASGM contexts, his definition of *doxa* is useful to conceptualize the field in which this habitus originated:

> ...the established cosmological and political order is perceived not as arbitrary, i.e. as one possible among others, but as self-evident and natural order which goes without saying (...) the agents´ aspirations have the same limits as the objective conditions of which they are the product. (1977: 166)

Doxa is the field of implicit meaning in which, in this case, gold mining at some point was carried out. But it is a field of meaning that, despite its predicaments in the legacy of mining, has been thoroughly contested through efforts to regularize, control and organize it, not only as a will to *improve* it, but also through a will to exploit it, i.e. the historical efforts by several regimes to take advantage of mining labor and channel the profits of mining *out* of P-Z. Hence, if the origins of the mining habitus were to be found in a doxic field, the contestation, whether in the shape of governmental efforts to exploit it or regulate it, has questioned its *legitimacy* and thus moved doxa into a field of opinions (heterodoxy/orthodoxy), that is, into the arena of politics (Bourdieu 1977:168).

Still, in contrast to more recently emerging ASGM sites, the legacy of mining in P-Z is, as we have seen, both deep and complex. Accordingly, what Bourdieu terms as ¨the agents' aspirations¨ corresponding to their ¨objective conditions¨ in the quote above,

encompasses ASGM contexts characterized by recent, artisanal exploitation that dominantly operates within the confines of poverty alleviation. In P-Z, the co-existence of several scales of mining, its emergence through the Incan rulings, through the Spanish hegemony towards its early industrialization, have developed a political field that contains a deep and multidimensional meaning of what mining is and can be. In this field, different variants of economic rationalities have co-existed, problematically yes, but consolidating towards sustaining the economic incentive to legitimize various kinds of mining operations (cf. Scott's ¨culture of extractivism¨ discussed in chapter 3).

Only recently have this extractive logic been challenged by governmental concerns about its contaminating properties, yet as we can recall from chapter 1, the concern of malignant health consequences related to mercury exposure was observed already in the 17th century. And whilst new scientific knowledge is highly influential to the governmental will to improve environmental and security standards in this sector, the economic exploitation of artisanal miners is merely observed, but not further addressed. Rather, it is supported as an entrepreneurial achievement and used as a bridge for cooperation (cf. INIGEMM's attempt to create a win-win situation – higher economic returns and environmental impact mitigation). Artisanal miners do not openly protest on the exploitative element in this regime because either ways, they are dependent upon the processing plants to process their ore. That being said, many have found a way to unite and set up their own little plant with a mill, but most of them still rely on renting this service, in which their gold return may be below 30% of the gold content in their ore. Even though this is clearly a skewed working regime, as most economic benefits go to the processing plants, there is a complementarity at play here, and the privileges of the processing plants are, in the minds of local miners, legitimate because of the investments and risks taken by the owners of the plants. Accordingly, when regulations threaten to change this regime, local miners apprehend this as a cover for reducing the sector all together. Thus, by applying the prototype of the artisanal miner in public acts (the demonstration) or a derivation of the mind-set of this prototype (the workshop), this symbol works as a collective defence-mechanism to continue ¨business as usual¨, which includes opportunistic practices, but importantly also the survival of the prototype, which in the words of Ortner translates into sustaining a key symbol in local identity.

The differences in conceptualizing ASGM as a livelihood orientation (local miners) or ¨a problem with a potential to be scaled up¨ (INIGEMM/scientific episteme), resemble the difference between an emic (internal view) and an ethic stance (external view), yet none of these critically address the political-economic conditions that sustain the current state of

affairs. By avoiding this, and by rendering the problems technical (cf. chapter 3) rather than political, status quo is suspended to a state of ¨permanent deferral¨ (Murray Li 2007:15), in which few if any, substantial actions are taken to address the political economy of ASGM in P-Z. Furthermore, there are reasons to suggest that the ethic/external stance is indeed also an emic view, that is, far from objective, but rather reflecting a specific scientific episteme (natural science/positivism) imbued with normative claims to truth (Barnard 2002: 182).

A typical question from the tradition of political ecology would then be: who wins and who loses in this situation? As I illustrated above (chapter 2), the degree of miners' economic success is highly dependent on the fluctuations in international gold prices. Yet regardless of that, the situation in P-Z largely benefits the owners of processing plants, who take advantage of the government's failure to control and regulate the sector. Likewise, and increasingly so, the largest operators, epitomized by ELIPE, benefit from a situation where the major problem identified by state representatives (informed by the discourse of natural science) is the controversial mining practice among artisanal and small-scale miners. These large companies position themselves as responsible mining actors *in contrast* to smaller operators by aligning with the scientific episteme to marry under the umbrella of corporate social responsibility. This is where the big money is. The scientific community on the other hand, in which we can include INIGEMM and the research that informs ¨us and them¨ on technical and contaminating properties, may have a good portion of genuine will to improve things, but from a critical perspective, they also secure themselves with quite good prospects for future (paid) work in P-Z by reducing the problem to questions of efficiency and improper mining praxis.

As we have seen, a recurrent recommendation for improvement on behalf of this scientific community (see chapter 2 and particularly the conclusions in Miserendino et al 2013; Veiga et al 2014) is training and education of local miners. In other words: to incorporate miners into the epistemology of natural science. While this is not necessarily recommended in a paternalistic fashion, the last two empirical accounts make it quite clear that local miners *interpret* it as such. The more general point, or concern, is that this has been the on-going refractory scientific approach for several years. And while there have been some improvements, especially the eradication of child labor (which admittedly may be conceived as a major progress) and to some extent waste management, these are marginal despite some researchers emphasizing ¨the success¨ of P-Z (see chapter 2). In fact, an immediate consequence on the rumours of a prohibition on mercury (which is strictly speaking *not* legally enforced according to the latest reform of the Mining Act) was that artisanal miners

recurred to burning their mercury amalgam in their houses or in the countryside to avoid being caught by ARCOM while doing this in the processing plants (with retorts, at least occasionally). The consequence is a worsening of air pollution in P-Z, a pollution that has previously been measured to contain severe human health implications (Gonzalez-Carrasco et al 2011). Hence the situation of ¨permanent deferral¨ creates favourable conditions for the continuance of industrial pollution. As a ¨local matter of fact¨ everyone knows that miners continue to discharge mercury and cyanide rich tailings into the rivers, despite their obligation to deliver this by truck to the communal tailings pond. The mayor of Zaruma, responding to questions of why contamination continues, recently (8th of April 2016[xi]) said that:

The mining industry doesn't give a shit about the environment. Its interest lies in benefitting economically. If you pass by the river after 8 o'clock pm it's full of sand (tailings) because everyone discharges their waste (…) They only send a portion of their contaminants (to the communal tailings pond). ¨I am the owner of that and this mine and I send this amount¨, to comply. Yet even if they had sent it all it would still be contaminating. Because the tailings are transported (uncovered) by truck through the whole town.[20]

In the most recent scientific publication from P-Z, Nichols et al (2015) leave the reader with the impression that all the processing plants are to be closed down in the immediate future and removed to an industrial park in proximity with the communal tailings pond. Yet according to miners and people in P-Z, this is still very much a plan with no binding agreements towards its realization. The communal tailings pond has indeed been operating since mid-2014, but there are several problems concerning its design, its infrastructure, maintenance costs/competence and the administration in charge (*Gobierno Provincial de El Oro*), along with the lack of compliance on behalf of the miners. As Nichols et al remark, it is correct that there are plans to build a pipeline (*arenoducto*) that will transport tailings and waste from the processing plant to this tailings pond. Yet, this plan has been discussed for five years and has still to become a reality as it depends on the approval from the Ministry of Environment among others. APROPLASMIN and INIGEMM were the initiative-takers to build this pipeline, and although there is broad scepticism among ARCOM officials about its potential success (largely due to the fact that the plants will still be placed along the river), local opinions suggest that the main obstacle are the largest mining companies and their intimate relation with government decision-makers. These companies have their own tailing ponds and

[20] *A la industria minera le interesa un comino el ambiente. Le interesa sacar su beneficio. Pasas por el río a las 8 de la noche y está lleno de arena porque todo el mundo bota los desperdicios (…) Envían solo una parte de los contaminantes (a la relavera comunitaria). Soy el dueño de tal minera y envío tanto, para cumplir. Pero así envíen todo, contaminan. Porque eso va en camión por toda la ciudad.*

water treatment plants, and in a scenario were all the other plants send their tailings through the pipeline, any evidence of continued contamination of the rivers will point directly at the few companies who do not connect to the pipeline.

Even in the hypothetical scenario that all processing plants will be closed shortly, it is fairly optimistic to suggest that this ¨will result in significantly less, *if not zero*, ASGM-generated tailings entering the local rivers¨ (Nichols et al 2015: 46, my emphasis in cursive). While ignoring the naïve and utopian assumption in this conclusion, the problem in these statements, correlating with several scientific publications quoted above, is that they reiterate the problem as technical rather than political. Thus, and as discussed numerous times by now, the controversy of environmental degradation in P-Z is portrayed and maintained as ¨a tragedy of the commons¨ where the only viable solution is to educate those *mineros malcriados*.

Concluding remarks

Different kinds of knowledge and ¨regimes of truth¨ shape the politics of mining in P-Z as elsewhere. This may be self-evident, but this chapter has illustrated how this actually occurs in a specific context, insinuating that cultural and political-economic conditions will always influence this process and that sweeping generalizations fail to grasp the dynamics that sustain ASGM across countries and continents. This is not to de-legitimize efforts towards comparing ASGM practices, but rather to suggest that mining praxis and its complex consequences must be contextualized within its historical, political-economic and social scene. Bourdieu is helpful here because he suggests, in line with Foucault, that epistemologies are politically imbued, but moving beyond this, we can use his theories about habitus and doxa to conceptualize how the ¨self-evident¨ or ¨what goes without saying¨ involves a social cohesion that can be put into motion, that is, as a mobilizing political force against external interference[xii].

In the perspective of interlegality as a process occurring in a ¨semi-autonomous field¨ (Simon Thomas 2009), this chapter has situated the conflicting normative agendas in their respective epistemologies. As we have seen, this is not a trivial theoretical observation, but a collision that sits at the heart of the problem of regulation. As suggested in the previous chapter, it illustrates what Murray Li identified as the tricky position of trustees as experts telling local people what to do, a task that is fundamentally difficult to achieve (as reflected

by all sorts of Northern ¨development¨ engagements in the South) and ethically challenging in itself. One way to start however, as has been an underlying argument in this chapter, is to acknowledge that the will to improve in the case of ASGM in P-Z, is also situated within a very specific epistemology (natural science) and that its coupling with the doctrine of corporate social responsibility is a major obstacle in the eyes of artisanal miners in P-Z.

More generally, this chapter reflects how practical wisdom couples with a collective sense of belonging in the shape of local autonomy, to oppose any external interference (both external regulators and external mining companies) and how this fits into the discourse of class struggle. While it is tempting to reiterate this ¨fitness¨ in the sense that the largest mining companies, the State and the scientific community taken together, indeed represent a powerful discourse that marginalize both the ideas and actions of artisanal miners, this chapter also tells the story of how this situation can be used to obscure the complexity in the field. More to the point, the account from the demonstration illustrates how collective worries among artisanal miners and the collective will to confront any regulation, is used politically to maintain the privileged and exploitative position of the processing plants. To what extent this is a planned strategy on behalf of APROPLASMIN is potentially a polemic discussion in P-Z, but the outcome is rather clear; the local mining elite consolidates its power vis-à-vis governmental authorities (by its ability to mobilize the mining community) and vis-à-vis artisanal miners (by its ability to speak up against increased regulations) that are largely locked into an exploitative working regime.

Concurring with Foucault, I think that ¨truth¨ is an effect of power rather than something empirically determined. One way to acknowledge this is by considering the human fetishism of gold, i.e. not as an arbitrary relation, but a very peculiar and long-standing human invention about a particular metal and its value[xiii]. In other words, gold may occur naturally as an empirical fact, but the reasons to exploit it (or not) derives from human ideas which is necessarily politically imbued. This has some serious consequences for scientific knowledge production, especially on the inherent assumptions of positivism or any claims towards objectivity. Hence I consider the apolitical pretensions (its inherent claims to constitute objective knowledge) represented by INIGEMM and its collaborating scientific community as highly political. Bluntly put, they may be right or wrong, but they are indeed political.

The last chapter seeks to overcome the relativity that may be discerned in these interpretations. As this thesis has suggested, sometimes explicitly, sometimes implicitly, power relations and the effects of power permeates the politics of mining and render the field fundamentally political. Hence some reflection on this is appropriate.

Notes

[i] This kind of knowledge resembles the Aristotelian concept of ¨phronesis¨, which essentially means practical wisdom obtained through experience. See Moss (2011).
[ii] www.oxforddictionaries.com
[iii] Robbins differs between ¨hard¨ (radical) and ¨soft¨ constructivism (2012:127-130) whereby Kant would be a proponent for the first and followed by Foucault´s genealogical studies where the notion of ¨truth¨, or even ¨reality¨ is inescapably linked to contextual power and authority (Robbins 2012:123-4). What I am aiming at here is rather the contradiction of political ecology´s position in social constructivism while at the same time scrutinizing the social construction of environmental narratives.
[iv] For Heidegger,"Being-with (others)" comes prior to, and is an existential condition to "Being-in-the-world" (Weiner 2001:6).
[v] A generalization of scientific progress solely in the name of secularism would ignore the fact that the great religions seem capable of incorporating science and that many famous scientists/philosophers had religious faith, e.g. Newton, Darwin, Linnaeus, Kierkegaard, Einstein.
[vi] There are undoubtedly several knowledge schemes (practical, cultural-religious, and interdisciplinary variations) at play simultaneously also *within* epistemic communities, but his is somewhat beside the point, as my aim here is to contrast different groups, leaving internal variations and idiosyncrasies alone for the sake of the argument.
[vii] It would be pointless to enlist these thinkers here, and it would also be beyond my familiarity. Yet much of this literature can be found in the so-called ¨ontological turn¨ (Paleček & Risjord 2013) within political ecology (especially through its anthropological exponents). If you want a tentative list anyway (?), this line of thought includes the works of thinkers such as Bruno Latour, Marylin Strathern, Donna Haraway, and Eduardo Viveiros de Castro.
[viii] The mining underneath the city of Zaruma is a common concern for its inhabitants, not only because it creates risks for buildings and infrastructure to collapse, but also because it works against the city's ambition to become a UNESCO world heritage site. ARCOM has an on-going project aimed specifically at this illegal mining. The project has a duration of three years with the objective to determine and safe-guard the safety zone and the frontier of the mining exclusion zone in the urban areas. Yet ARCOM struggle to succeed, as local miners with extensive knowledge about their underground whereabouts, invade the old tunnel systems to exploit rich ores.
[ix] This reflects the apolitical research referred to throughout the thesis, which mainly springs out of Norman B. Keevil Institute of Mining Engineering at the University of British Colombia, and in Ecuador; the Universities of Machala and Loja.
[x] Not to be mixed with its counterpart in the US. The Ecuadorian University of San Francisco is a private university situated just outside Quito, and is considered among the best in Ecuador on social science.
[xi] The quote is retrieved from a recent newspaper article (http://expreso.ec/actualidad/la-contaminacion-desde-dentro-FH238689). The translation is mine along with the clarifications in parenthesis.
[xii] In contrast to Bourdieu's intricate theories on structures and power, he is rather clear on this point: *The theory of knowledge is a dimension of political theory because the specifically symbolic power to impose the principles of the constructions of reality – in particular, social reality – is a major dimension of political power.* (1977: 165)
[xiii] For a discussion on this see Peter Oakley's chapter on the ¨social identity¨ of Fairminded gold (in Drazin & Küchler 2015: 155-74). For a chef-d'oeuvre on the fetishism of gold (and cocaine) see Michael Taussig (2009).

Indeed, the dynamics of cultural imperialism
are such that, while the power structure
of colonialism is everywhere clearly laid down,
the colonizing process itself is rarely
a simple dialectic of domination and resistance.
- Comraroff & Comaroff 1989

Chapter 5 – Power, interlegality and political ecology

The previous chapter attempted to analyse the politics of mining by examining stakeholders' epistemological foundations and their articulations. It basically said that local miners and external scientists wake up to think very differently about what mining is and should be. The empirical accounts illustrated the difficulties towards harmonizing these divergent conceptualizations imbued with their respective, normative claims. The regulators in the institutional shape of ARCOM on the other hand, were not treated to the same extent, but we could place them in the tricky middle-position between the claims of miners and the claims of INIGEMM. As we saw in chapter three, ARCOM officials are the mediators between mining praxis and mining legislation and must accordingly answer to both parts. While their loyalty, at least in theory, is with the Ecuadorian State, we also saw that the role as trustees entails, at best, a search for compromises and that their assessments are influenced by the working contexts.

In this final chapter I put the concept of power at the centre stage of the analysis. I have already touched upon it several times in the passing, especially by drawing on Michel

Foucault's ideas about the contingency of truth in the previous chapter, but also by outlining the hierarchical composition of the mining community and the (historical) marginalization of artisanal miners. This is also with us in the following. Yet, there are other dimensions to power that has not been addressed thoroughly and while the literature on this in political ecology (at least it critical strains) is abundant, some perspectives fit better than other with my interpretation of the politics of mining in P-Z. I will spell this out in the first part of this chapter. Here it suffices to say that I am interested in what Lukes (2005: 65-8) distinguishes as the moral context of power in contrast to practical and evaluative contexts. The reason for this is that Lukes, when treating the moral context, picks upon the notion of responsibility. This is interesting because it enables us to acknowledge that the reasons behind the problematic situation in P-Z is due to an intricate complexity of the nature of ASGM, in which it is difficult to define who is to blame for its consequences. Yet still, we can maintain this complexity and simultaneously say that certain actors, more powerful than others, have the capacity to change, or avoid changing, a structural problem which is caused by several conditions (67). Henceforth, there is indeed some actors that have more responsibility than others. These actors and their doings were, to some extent, identified in the previous chapters, especially APROPLASMIN, ARCOM, and ELIPE. Furthermore, by following Lukes' theories, it is not only the actions and decisions of these actors that influence the situation, it is equally important (if not even more) what these actors *do not* do or refrain from doing. Lukes draws on Bachrach & Baratz to clarify this for us:

> A decision is ´a choice among alternative modes of action´; a nondecision is ´a decision that results in suppression or thwarting of a latent or manifest challenge to the values or interests of the decision-maker´(...) Thus, non-decision-making is ´a means by which demands for change in the existing allocation of benefits and privileges in the community can be suffocated before they are even voiced; or kept covert; or killed before they gain access to the relevant decision-making arena; or, failing all these things, maimed or destroyed in the decision-implementing stage of the policy process´ (Bachrach & Baratz 1970: 39, 44 *in* Lukes 2005: 22-3).

If we consider this in the light of the exploitative working regime that processing plants and mining legislation enforce upon artisanal miners, and the fact that the latter hardly raise their voice regarding this, it is clear that there is some ¨suffocating¨ going on here. Likewise, as has been addressed several times: scientists' non-decision to confront the political economy of ASGM is indeed a highly political choice with political consequences. Resembling this conceptualization and reiterating the problems as technical, it is also possible to conceive the Ecuadorian State's decision to favour the largest companies (today as historically *and*

spatially across the Republic), their failure to empower artisanal miners or any efforts to incentivize alternative means of livelihood, as non-decisions. And lastly, it is also possible to link the contaminating praxis of processing plants to a non-decision of taking the health of downstream communities, including Peru, seriously at all. All of these non-decisions, of course, rest on different kinds of rationales and explanations, but the point is that this constitute the situation of ASGM in P-Z, a situation that is sustained and reproduced on an everyday basis. To use Voyles' conceptualization of ¨wastelanding¨ (see thesis' introduction), this situation renders the context of P-Z as *pollutable,* meaning that the place is considered to be worth sacrificing for the exploitation of natural resources. Illustrative of this process in the context of P-Z, as I touched upon in the introduction, is that some local people referred (humoristic or not) to the smell of cyanide upon arriving in El Pache, as the smell of home. Yet, Voyles' point on wastelanding is not exclusive for P-Z, quite contrary, it is a common denominator for extractive contexts and applies as much to the contamination taking place in Navajo lands (Voyles 2015) as the Appalachian coalfields (Scott 2010) and many more. As Scott suggests, this is discernible in a ¨culture of extractivism¨ (2010: 6-20) where the environment (and marginalized people) is sacrificed in the search for profit. Ultimately, as pointed out in the previous chapter, this stems from the human separation from nature during the European ¨enlightenment¨, consolidating itself through the industrial revolution and Western colonization of the ¨third world¨, and finally, naturalizing itself through the hegemony of contemporary neo-liberalism. This is not to say that this process has not been contested, but the question of externalities (both cultural and environmental) has hardly been recognized at the same level as the logic of extractivism, at least not in P-Z. My point here is not as much directed to the balance of cost-benefits, but rather to the hegemonic effect of maintaining the problem as a technical issue within an extractive rationality. The effect is, of course, that alternative visions and alternative livelihoods are suppressed.

This takes us back to the issue regulation and interlegality, which I treat in the second part of this chapter. Here I wish to conceptualize the process of interlegality as the tension that sustains the dispute of regulation in P-Z. I largely follow de Theije et al (2014) and their use of interlegality as conceived by Simon Thomas (2009). While complementing this with theories from political ecology, in the end I seek to expand this view by critically addressing what I regard as a normative agenda to the approach of political ecology and the explorations of interlegality. Yet, before I do this, some reflection on the concept of power is needed. I should also be explicit about the fact that this last chapter, in contrast to previous ones, is more theoretically oriented and, as expected, more conclusive.

The semantics of power

Considering the insight from Foucault on how regimes of truth, that are ¨produced only by virtue of multiple forms of constraints¨ (1980: 31) and how truth ¨induces regular effects of power¨ (ibid.), the link between knowledge (authoritative, objective, doxic) and power becomes clear. At least, we can say that truth is produced by someone, contested by others, and that the question of domination (objectification) is less a question of (objective) validity, but rather a question of the powerful, political alliances one version achieves to make (i.e. think of capitalism in relation to the saying: ¨time is money¨). I conceive this as the essence in Foucault's early archeologic project into knowledge (1969; see also Gordon 1991: 46-8), that is, how knowledge and the production of truth is contingent upon its political circumstances. Accordingly, this insight can be applied to the history of mining in P-Z (chapter 1) or in relation to the actors' epistemological foundations (chapter 4). Furthermore, we can see how this aligns with Lukes' view below:

> …there are disagreements about where power lies, how far it extends and how its effects are brought about which it is plausible to see, not as disputes over the facts but over how we should characterize them, as contests about how we should think of power¨ (2005: 62)

Although power seems like a difficult concept to define (as culture or society), several thinkers have thought and written extensively on this[i]. In the following I briefly touch eclectically upon some of these, as my intention is *not* to do this exhaustively, and finish of with some reflections on how this can be conceived in relation to ASGM in P-Z.

A conventional line of reasoning used to characterize power begins with Marx and Engels' observations of the effects of the industrial revolution, that is, their ideas of class struggle and capitalist alienation. This is further elaborated by the works of Max Weber (e.g. *The Protestant Ethic and the Spirit of Capitalism*) and Emilie Durkheim's theories about social integration (e.g. *The Elementary Forms of the Religious Life*). This serves as a foundation for sociologic theory on power through exponents such as Anthony Giddens, Michel Foucault and Pierre Bourdieu. In contrast to a static and enclosed conceptualization where power is an attribute of actor(s), or simply an act of coercion (Raik et al 2008: 731), the major insight of these authors is a *relational* and *dynamic* perspective on power. Additionally, they all stress the unconscious and invisible character of power. If we follow Giddens in his

theories of structure and agency: ¨power is regarded as generated in and through the reproduction of structures of domination¨(1981:4, cited in Barnard & Spencer 2002:446). Here we find a perspective in which power permeates individual action in the interface between choice (agency) and constraints (structure) (Cleaver 2012:36).

Meanwhile, Bourdieu (1977) pursued an understanding of power through the concepts of *habitus* (72) and *doxa* (166). Here, the actors are likewise deeply entangled in unconscious structures of cognitive domination (e.g. the habitus of informal mining), as well as situated within established cosmological/political orders that appears objective (doxic). Yet, as we saw in the previous chapter, doxa as habitus may be contested (by other actors) and thus lose its unconscious dimension, which transforms them into a mobilization of bias instead. For Bourdieu, the dynamics of power is largely about the concept of capital (economic, symbolic and cultural) in which domination is achieved by converting and accumulating these kinds of capitals (1986). This is indeed a long treatise I will not embark on here, but Bourdieu makes a point towards emphasizing that economic capital is not necessarily hegemonic, but often underpinning accumulated symbolic and cultural capital and vice-versa[ii]. I think we can discern this by recalling APROPLASMIN and their ability to mobilize the mining community in the previous chapter. Not only does APROPLASMIN profit from its economic capital (which would rather reflect the position of ELIPE), but it also draws on cultural capital (local integrity) and symbolic capital (representing the claims/interests of the mining community).

Another prominent exponent for analysis on power relations, especially linked to Marxist inspired peasant studies and later on by his efforts towards theorizing power, is Eric Wolf. In my view, his insights resemble Bourdieu's definition of habitus (see previous chapter) when Wolf defines his fourth modality of power as:

Structural power. Power that not only operates within settings or domains but that also organizes and orchestrates the settings themselves, and that specifies the distribution and direction of energy flows. (Wolf 1990:586-7, my summary)

This definition echoes what Raik et al (2008) also term ¨structural¨ power. Yet these authors attempt to overcome the dualism of structure and agency by presenting a ¨realist view¨ on power. Even if we ignore the problematic connotations of the word ¨realist¨ as it generates associations towards positivism (especially in contrast to Foucault and before him Kant's radical neglect of materialism as outlined in relation to the discussion of ontology/epistemology in the previous chapter), the view on power as ¨real¨ where ¨human agents exercise power within preconditioned, structured social relations¨(Raik et al 2008:

732) hardly achieves its aim. It is partly acknowledged by the authors as they are not able to come up with any empirical evidence of this, but rather recur to a hypothetical illustration (736-7). Moreover, Raik et al's definition of the realist view is above all, at least in my conception, a reiteration of the dualism they attempt to overcome. Their general point however, one in which we might agree, is that the outcome of the relationship between agency and structure is not a given and that this relationship is mutually produced (agents creating structures and vice-versa). Hence, we can somehow theoretically conclude with Lukes, building on John Lock's attempts of defining power in the 17th century, saying that:

…having power is being able to make or to receive any change, or to resist it. (…) It implies that power is a *dispositional concept*. It identifies a capacity: power is a *potentiality*, not an actuality – indeed a potentiality that may never be actualized (Lukes 2005: 69, my emphasis in italics)

In relation to the previous chapter about knowledge we can accordingly say that knowledge is not necessarily power, that is; having large quantities of knowledge in relation to others is not the same as having correspondingly more power than others, but *potentially* it is. If we circumvent the acknowledgement that knowledge can be many different things, a familiar example would be the power/authority parents have on their children. Yet as most parents know very well, there are some very real (and frustrating perhaps) limits to this power.

With Lukes' view of power as a dispositional concept, we can maintain Murray Li's interpretation of Foucault, her limitations on governmentality and the empirical situation of ASGM in P-Z where the actors draw on divergent regimes of truth. In particular, as Murray Li (2007) elaborates on ¨the conduct of conduct¨ in which a government (in her case Indonesian) ¨attempt[s] to shape human conduct by calculated means¨ (5), these ¨calculated means¨ are not coercive or violent, but quite contrary, and echoing the work of INIGEMM, invitingly educational, slightly normative and/or formative for moral-public consensus. If we relate this to Bourdieu, it can be seen as an on-going attempt (i.e. the will to improve) to reconfigure the habitus of mining in P-Z and confront the presumptions among local miners, i.e. challenge their doxic experience of the morality of mining. Yet people speak up, as we recall from the previous chapter, and it is worth quoting Hanna Arendt on this point:

Power corresponds to the human ability not just to act but to act in concert. Power is never the property of an individual; it belongs to a group and remains in existence only so long as the groups keep together. When we say of somebody that he is ´in power´ we actually refer to his being empowered by a certain number of people to act in their name. The moment the group, from which the power originated to begin with (*potestas in populo,*

without a people or group there is no power), disappears, 'his voice' also vanishes. (Arendt 1970: 44 cited in Lukes 2005: 32)

Arendt's words remind us of the foundations of modern democracies and democratic structures, yet there are some limitations to this, especially in terms of how these democracies (in the case of P-Z: the Ecuadorian government and APROPLASMIN) operate. If we furthermore add Foucault's rejection of a distinction between ideology and science (McNay 1992: 25) , i.e. objectivity as non-existent and truth as something being produced, we can conceive the relation between trustees and miners in analogy with that of parents and children (oppositional teenagers perhaps). At least it indicates that the recurrent mantra among researchers to educate local miners, ARCOM's utterances to change mining culture, and miners being provoked by this approach, carries a paternalistic element with it. Hence, the governmental regulation of ASGM somehow resembles parents' efforts to regulate their children – a challenging task indeed.

Or is it the other way around all together? As we can recall from chapter one and SADCO's industrialisation of mining, this company largely dictated the terms and conditions of their doings by drawing on its cooperative, economic power when negotiating with the Ecuadorian State, but it is also reasonable to suggest that its origin in the US, a nation heavily engaged in imperialist expansion throughout the world at that time, enhanced it status. Likewise, we have also seen how this praxis is replicated in the workings of ELIPE. Not only on a political level, by profiting on the current Correa administration that openly invites foreign, large-scale mining companies to proliferate in Ecuador[iii], but also down to the level of enforcing mining legislation (i.e. the empirical account in chapter 3). To finish off this thought experiment: if the State is the father/mother, are these companies (SADCO/ELIPE) the grandfather/mother or its siblings? In other words, are they authoritative in relation to the State or are they a sister/brother merely providing a good example for the bewildered and uncontrollable kids, i.e. small-scale and artisanal miners? And what about APROPLASMIN, what is their role and status in this imaginary kinship system?

If we ask people like Don Lucho (chapter 1), El Toro (chapter 2), Claudio and Miguel or Danilo Castillo (chapter 4), their answers would probably differ in many regards, but, and I think it is possible to say this, they would probably agree that SADCO represented a paternalistic figure in relation to the Ecuadorian State (despite all the alternating governments), while ELIPE today increasingly represent a brother/sister relationship with the State (i.e. an alliance in search for mutual benefits). However this may be, this is quite

problematic for the local mining community and their sense of ownership to both place and tradition. Notwithstanding the internal hierarchy of the local mining community, it unites to oppose the rulings of its ¨father¨ (the State) and ¨older brother/uncle¨ (ELIPE). Accordingly, APROPLASMIN likewise plays the role of a big brother in relation to artisanal miners. Yet in contrast to ELIPE, APROPLASMIN draws upon its local integrity by mobilizing and giving voice to the mining community's opposition. Still, as we have also seen, APROPLASMIN (as a big brother), is also prone to take advantage of its weaker siblings.

And whilst I have made an argument of the exploitative character of the internal hierarchy of mining in P-Z, we should not underestimate the importance of unity and social cohesion as constituents for the functioning of a society. This resonates with the work of Durkheim, and although he may arguably have been too functionalist in his approach, he certainly had a point ¨concerning the nature and conditions of social solidarity in ever more complex and differentiated societies¨ (2014: viii, from Steven Lukes' preface). Translated into the context of P-Z, and coupled with the above-mentioned non-decision of the Ecuadorian government to empower artisanal miners, this means that the latter unite with their community (including both powerful local miners and the general population outside the mining sector) in order to make a general impact and oppose all external interference. This is important for them, despite the fact that their mining and processing is not optimal, because what is at stake in relation to increased regulation and external mining companies, is ultimately their source of livelihood, their autonomy and their local identity. My critical objection is nevertheless, that some of the owners of processing plants, in an opportunistic fashion, take advantage of this collective support and that ELIPE profits on the fact that the regulative attention is mostly directed to artisanal use of mercury.

Lukes finishes off his emblematic treatise of power with a quote that speaks about power meeting resistance, and whether it is somehow unclear if the quote is his own or that of Foucault or Spinoza, it actually pinpoints some of the dynamics of the political situation in regarding ASGM in P-Z quite eloquently:

> in spite of all that political skill has been able to achieve in this field, it has never been completely successful; men have always found that individuals were full of their own ideas, and that opinions varied as much as tastes. (Lukes 2005:151)

This involves power as a disposition in political tools and how these partially fail or partially succeed to establish a normative order. More concretely and returning to the analytical scope of this thesis, we need to see this in relation to mining legislation, its enforcement in the field

and the responses it creates. One example that serves to conceptualize this, is a consideration on the specificities related to the governmental efforts towards mitigating the use of mercury in P-Z. Symptomatically or correspondingly (depending on the perspective applied), mercury and its use has been and continues to be, the major point of attention for research on ASGM in P-Z, as well as globally. I agree that this is a legitimate focus for study that needs to be scrutinized, yet here again, the research treats a symptom (the signifier) and not the cause. And, as this thesis have attempted to illustrate, the cause does not merely lie in ASGM as a form of poverty alleviation or in an assumed ignorance among local miners. Contrastingly, a part of the cause was, as underscored by my miners in P-Z, the lack of feasible alternatives (see chapter 4). Still, the use of mercury is sustained by two additional aspects.

First, mercury is intrinsic to the habitus of informal mining. Accordingly, this point aligns with the overall research on ASGM where mercury use is a consequence of its property to capture minerals and the ¨easiness¨ of applying this technique. As I have illustrated (especially in chapter 1), the use of mercury has a long history in P-Z. It comes into being with the colonial commodification of nature and the first testimonies of its use, and its malignant health consequences, stemming from early 17th century. It became, as I remarked in chapter two, a substance that improved the efficiency of transforming nature (the mountain) into a commodity (gold), and its legacy has been consolidated ever since. For artisanal miners it has maintained its facilitating status, which has reiterated the independent potential and character of the prototype of the artisanal miner (see chapter 4). Regarding more industrialized mining, the position of mercury was challenged by the emergence of cyanide as a better alternative from the early days of SADCO in the beginning of the 20th century. And despite the fact that cyanide, in contrast to mercury, can be detoxified with the use of microbial species (Ackil & Mudder 2003), it would be a utopia to think that cyanide is the path towards sustainable mining. Rather, the local praxis of handling cyanide resembles that of mercury, in fact, the discharge of tailings containing both substances have created a whole new set of pollutants, i.e. mercury-cyanide compositions that enables quicksilver to travel even further downstream towards Peru (see chapter 2).

The second reason why mercury use is sustained in P-Z stems from the profitable business model applied by processing plant owners in which the fast and cheap use of mercury corresponds to impatient artisanal miners' needs to quickly obtain their minerals. In these situations, the processing plants take advantage of the inefficiency of mercury (only capturing 30-40% of the gold contents) since artisanal miners leave the residues as part of the payment for processing their ore. These residues, as the attentive reader will recall, are re-

processed in cyanide tanks that capture the rest of the gold and silver contents (see chapter 2). Whilst this can be called an entrepreneurial achievement by proprietors of processing plants that has invested both money and efforts in their infrastructure, the point here is that this scheme is actually supported by Ecuadorian mining legislation enforcing artisanal miners into this regime under the assumption that this praxis is a responsible and professional alternative to artisanal miners doing the processing themselves. Yet, as the problems with mercury continue, either through its use in processing plants or as a consequence of the prospect of a prohibition, i.e. covert mercury amalgamation in private homes (far from or near urban areas), this put the largest operators, who only recur to cyanide and flotation, in a favourable light which strengthens their alliance with the government. In other words, the attention and emphasis given to the controversial mercury use obscures the praxis of larger companies, that continuously aim to maximize their profits, which means pushing all environmental standards *and* fiscal regimes to its very end. Furthermore, it is naïve to think that this does not include illegal praxis under the saying that *as long as no-one knows, no harm is done.*[iv]

Local contestation of regulation seen in this perspective is, accordingly, a contestation of the power relations that prevail in P-Z, most visible in the local/external dichotomy. And although there is a general, governmental will to improve the ASGM sector, improvement means very different things to different actors. Additionally, as we have seen, the governmental will to improve is conditioned by current and previous Ecuadorian governments' pro-mining rationality, where the aim essentially comes down to how much gold it is possible to extract from these mountains. Unsurprisingly, government regulators sympathize with the largest companies that share this aim, and have the economic muscles to see it through. In a context with thousands of informal miners with close affiliation to the place, this situation is deemed to create some friction. In this thesis, I have chosen to conceptualize this friction as a process of interlegality. What follows are some last words on this perspective.

Towards a theory of interlegality in ASGM

De Theije et al (2014: 129-30) argue that it is the *lack* of state authority in ASGM contexts that provoke ¨engaging legal systems¨, which are the strategic choices people apply by relating to a state of legal pluralism. Their use of the term ¨engaging¨ implies that these legal systems communicate, interact and influence each other (131), an observation that could be discerned through ARCOM's inspections in chapter three. I certainly agree with these

authors' appeal to understand this process in order to improve policies and mitigate conflicts (130), and that many problems ¨are actually rooted in the marginalization of the sector, itself arising from obstacles to legislation¨ (131). This last point emphasizes the historical formation of the artisanal miner prototype and the habitus of mining in P-Z as respectively a key symbol and an institution, born and raised at the margins of regulation. Yet, slightly contrasting de Theije et al, in the case of P-Z I question (perhaps a bit pessimistic) the government's capability of working towards improving the sector even in a hypothetical scenario with increased regulative presence. This pessimism mainly derives, as outlined in chapter three and four, from the observation that the problems are rendered technical instead of political. Furthermore, it springs out of the observed inconsistencies in Ecuadorian mining legislation per se (chapter 2), and the contradictions between the government's invitation to extractive corporations and their aim to criminalize ASGM under the cover of formalizing it[v].

If we dwell some more on the writings of de Theije et al, which is currently the frontier of explorations into the processes of interlegality in ASGM contexts, we can recall (from the introduction of this thesis) their important distinction between what is regarded as *illegal* and *illicit* mining praxis (2014: 132). The former relates to praxis at odds with formal mining legislation, while the latter relates to praxis which is socially regarded as unacceptable. As we have seen in previous chapters, this resonates with the governmental efforts of regulation (i.e. regulation of illegalities) and the claims made by the miners in P-Z regarding what, in their minds, are the illicit praxis of ELIPE in alliance with the Ecuadorian State. The contradictions inherent to this (i.e. local miners' unwillingness to accept the illegality of their praxis and the government's unwillingness (non-decision) to accept the illicit element in their regulation scheme) sit at the heart of the legal pluralism in P-Z. De Theije et al illustrate how this articulates very differently in three ASGM contexts which are differently composed in relation to mining legislation and their respective socio-cultural grounds. Their case from Surinam (2014: 134-37) discusses a traditional community's fight for formal land rights in the face of large-scale mining expansion, while their case from Colombia (137-40) discusses a situation of *de jure* legal pluralism where national law has, to some extent, recognized collective land rights of the Afro-Colombian communities, yet given the complexity of the field, the co-existence of different scales of mining still relies heavily on informal agreements between the stakeholders. Their case from Tapajós in Brazil (140-3) on the other hand, discusses problems emerging between the jurisdictional levels (federal vs. provincial) of mining legislation in contrast to the collision between formal and customary legal systems. In sum this accounts for a vast complexity of ASGM in a comparative

perspective and emphasizes the importance of studying the particularity of each case. Or, put differently, this suggests that the process of interlegality seen as the tension between top-down and bottom-up legal systems, is qualitatively different from context to context.

A similar conclusion is also reached by Mette High in a Mongolian ASGM context:

> Although the formal distinctions between legal and illegal activities cannot simply be presumed to be relevant to people's individual moral evaluations of present practices, laws articulate general distinctions that emerge from their dialectic with society. As noted by Pottage (2004), state laws do not exist above or beyond society, without any reference to or dialogue with the ways in which people go about their lives. Rather, state laws are cultural artefacts that tell us about legal as well as popular conceptions of the moral matrix of life. When current Mongolian legislation thus denies the legalization of individualized ninja mining, a particular Mongolian interpretation of how people ought to live slowly begins to appear. (2012: 16)

This quote also emphasizes that formal laws are not a consistent benevolent normative order securing the rights and well-being of its citizens, but rather, in analogy with ASGM norms in P-Z, Mongolia and other places, a legal system invented and created through negotiations between (alternating) governmental concerns/interests, political opposition (inside/outside the parliament), international conventions (e.g. Minamata Convention and the ILO convention 169[vi]), particular interest groups (e.g. global corporations, NGOs and local (indigenous) movements), and public opinion. Of course, formal laws are dependent (at least in the democratic sense) on a minimal amount of social integrity in order to have any normative effect. Yet, in the particular case of ASGM, there is presumably a wide discrepancy between national public opinion and local miners' conceptualization on the meaning of mining[vii]. And while regulation must accordingly be targeted somewhere in the middle of this discrepancy, this thesis has shown some of the difficulties related to the act of enforcement. Not only must trustees (ARCOM, INIGEMM) avoid a paternalistic approach, but they must tolerate the fact that the informal element is part and parcel of ASGM and somehow maximize the application of a problematic mining legislation, while sustaining a general pro-mining attitude among all parts (miners in all scales and the Ecuadorian State in all its representations).

The specificities of regulation and resistance in P-Z are hardly characteristic for all ASGM contexts throughout the world. Hence, it reiterates what Voyles (2015) pointed out in the introduction of this thesis: we need to complement the perspective on the *signifier* (i.e. pollution) with a critical view on the power structures that produce the conditions that make pollution take place exactly where it can be observed. In other words, the signifier may be more or less the same (ASGM sites undoubtedly struggle with different degrees of pollution and poverty), but the political, cultural configurations (from local to national and global

levels) and its dynamics are irreducibly particular to each case. Ergo, there is no escape from the particular analysis if we are to say something meaningful about the signifier.

In contrast to apolitical research that refrains from contextualizing mining operations in their political, socio-economic conditions, social scientists, especially the ones calling themselves political ecologists, have long ago acknowledged the message in Schattschneider's quote below:

All forms of political organization have a bias in favour of the exploitation of some kinds of conflict and the suppression of others, because *organization is the mobilization of bias.* Some issues are organized into politics while others are organized out.¨ (Schattschneider 1960: 71, in Lukes 2005: 20, emphasis in original)

Besides echoing with the importance of scrutinizing the non-decisions of powerful actors, this quote also resonates with Murray Li's analysis (see chapter 3) in which the exclusion of the political-economic dimension ¨both limits and shapes what improvement becomes¨ (2007: 8). The process of interlegality is accordingly a process of balancing the stakeholders' sense of output in relation to their respective claims, which in the case of P-Z is fittingly observed, as portrayed by Murray Li, in a ¨permanent deferral¨ (15) of confronting the political-economic dimension. There are compromises, but few substantial improvements, because the deeper problems are simply not to be found through technical improvements. Quite contrary to researchers saying that education of miners will resolve these problems, the overarching problem is that the current situation where legislation *in praxis* favours the largest operators, and thus legitimizes and enhances the opposition of artisanal miners against increased regulation. Henceforth, this consolidates miner's non-compliance and continued application of local norms at odds with formal mining legislation. Furthermore, the particular history of mining in P-Z gives credence to mining as an instrument of autonomy in relation to both central governments and foreign companies. After all, and following the local point of view, if it had not been for *their* ¨mobilization of bias¨, they would either have been partially swallowed by a large company (i.e. SADCO), forced to move somewhere else (as partially happened with the dismantling of SADCO and CIMA), or forced to engage in other activities (cf. coffee and cattle or the sugar cane production as witnessed in the early 19th century).

Accordingly, when I arrived to do fieldwork in P-Z, one of my first discussions about the ¨state of mining affairs¨ was with a local taxi driver. Although he was a taxi driver, he often recurred to mining to make a living and said that the situation with the State monopoly on dynamite and their plan to prohibit mercury was a source of widespread frustration in the

community. ¨They take you for a terrorist you know, if you are caught with some dynamite in your car¨, he said referring to the collaboration between ARCOM and the police to take action on the illegal use and storage of dynamite being smuggled in from Peru and Bolivia. The ban on mercury was likewise, totally unacceptable (illicit) according to this taxi driver, who sneered at the Correa administration as he finished off to say that: ¨the only thing we can hope for is that the people of Ecuador overthrow this government and replace it with someone who understands the conditions we currently endure here in Zaruma¨.

I have my doubts that this man has the sustainable solution for the environmental degradation of P-Z (who has?), but he represents a mining community that is deeply provoked by the attempts to regulate the sector. And although we can recognize that an implementation of increased regulation, at least in the beginning, is inevitably interpreted as provocative, this is utterly stressed due to local miners' observation of the governments preference for large-scale actors and by the fact that they are trapped inside an exploitative working regime in relation to the processing plants. Facing these circumstances, their confusion with the complexity and inconsistencies of mining legislation and the threats to criminalize their mining praxis, their response is to demonstrate publicly, while at the same time stick to do what they have always done, and in a worst-case-scenario, pay off ARCOM or whoever arrives telling them what to do.

Whereas the examples of artisanal miners like Claudio and Miguel and INIGEMM's metallurgic engineer having a bad day at work (see previous chapter), constitute two extremities in a polarized conceptualization of ASGM (that hardly talk to each other), I have also elaborated upon the middle-positions of APROPLASMIN and ARCOM. In relation to legal pluralism, it is interesting to note how these institutions that are placed in the mediating middle-position must navigate between formal mining laws and the norms that guide local miners, that is, between (il)licit and (il)legal mining praxis. This resonates (once again) with de Theije et al saying that: ¨individuals and groups can make use of more than one law to rationalize and legitimate their claims, decisions and behaviours¨ (2014:132). We saw this in ARCOM's inspections (chapter 3), where the contexts of enforcement were highly influential on the actions taken (or not taken) by ARCOM officials. Yet, by cataloguing their observations and building a confidential archive, they manage to ¨do two things at the same time¨, that is, adapt to non-compliance on field inspections and report on the irregularities, which at a later stage can be used to enforce sanctions and/or relieve them of the responsibility of not taking any immediate actions in the case of an accident. This is perhaps a necessary measure in order to avoid the strict implementation of the Mining Act, which we

recall (from chapter 2) in the words of an ARCOM official, as equivalent to closing down every single mine and processing plant in P-Z. Nonetheless, this regulative praxis certainly creates a space for creativity as well. Whether we call it creativity, entrepreneurial achievement, institutional bricolage (cf. Cleaver 2012), or opportunistic exploitation is less important. The point is that powerful local miners and owners of processing plants (regardless of their link to APROPLASMIN), attempt to maximize this space, and while the most successful are the largest operators that additionally receive a blessing from the government, middle-sized local miners in this middle-position profit substantially on this regulatory praxis. One could almost say that their success is dependent upon this regulation because their power (i.e. their active engagement into the potentiality of power) derives from their strategic position that forces artisanal miners to process their ore at processing plants, that despite being an exploitative regime, maintains local integrity (i.e. Bourdieu's cultural capital) by providing local employment and input into the local economy. Last but not least, and on top of it all, these mine/plant owners, albeit in varying degrees, manage to mobilize the local community and defend the interests of artisanal miners and thus increase, in the words of Bourdieu, their symbolic capital.

Implications for political ecology

Lukes' view on power as a *disposition* and a *potentiality* that may, quite literally, infuse all human relations, reflects a much applied perspective within political ecology. As political ecologists sing out quite loudly, this often articulates in asymmetrical power relations throughout the world in which the post-colonies have still to emancipate from their rulers that are no longer nation-states, but global corporations in a globalized world[viii]. Yet, there is an Achilles' heel to this perspective. I touched upon it towards the end of the last chapter, perhaps to the boredom of the reader, but I repeat it here once again to reiterate this observation in order to take very seriously what Astrid Ulloa, drawing on Arturo Escobar (2005b), says about the critiques of development:

> …critiques of development involve the need to consider poverty and capitalism as embedded development issues, and that processes of resistance to development should be analysed critically, and that *local processes should not be romanticized*. (Ulloa 2015: 324, my emphasis in italics)

Although it may take other forms than straightforward romanticism, I consider this bias towards local people's actions and mobilization against top-down implementations of

development programs (Murray Li 2007), mining capitalism (Kirsch 2014), or ASGM (De Theije 2014) as a problem underpinning the research agenda that characterizes political ecology. Of course, the reasons are many, and in the light of colonization, neo-liberalism and Western hegemonic practices, they reflect a legitimate critique that this thesis to a large extent is also part of. If we reduce this to a question of loyalty, i.e. where political ecologists should direct their critique at the face of all sorts of capitalist exploitation and destruction, I certainly unite against these actions. Nevertheless, this *is* problematic because, as I have shown, ¨… (gender relations) and inequalities between local people are blurred in the interest of collective political processes, without taking into account the differential effects of environmental and development policies (for men and women)¨ (Ulloa 2015: 329, my parenthesis'). This is of relevance even without taking the gender dimension into account.

Inequalities, in the context of ASGM in P-Z, are blurred in three ways: First, in the process of enforcing regulations, the local community unites to mobilize resistance despite the internal hierarchy among miners. Second, as an effect of rendering the problems technical, trustees, both in the shape of law enforcers and the natural science that accompanies it, avoid confronting these asymmetrical power relations. Third, if social scientists (i.e. political ecologists) fail to observe and analyse this blurred dimension, the interpretation will obscure important complexity and reproduce an inaccurate narrative. In fact, it may reproduce an element of predictability to the political ecologist approach towards environmental degradation/resource extractivism, in which important local dynamics are ignored or presented imprecisely.

Accordingly, I think it is worthwhile to consider this when analysing interlegality as well. Instead of aiming to balance the dynamics of top-down and bottom-up legal systems by sympathizing with the latter, I argue for maintaining a focus on the tensions this create and analyse the complexity emerging from this. As Murray Li (2007: 26) emphasizes, by reiterating the projects of Foucault and Gramsci, we must expose ¨how power works¨ in local settings, including the exposure of ¨unsettling truths¨, which must be ¨scrutinized and contested¨ rather than being ignored for the benefit of creating a more coherent narrative. As mentioned in the introduction of this thesis, I consider this of pivotal importance for political ecologists in order to avoid the fallacy of creating new narratives that merely reflect ideology/epistemology inherent to political ecology, rather than the complexity of empirical observations.

In the tradition of political ecology and upon returning to what Robbins terms as the uncomfortable juxtaposition between a realist (positivist) and a social constructivist approach

in relation to claims of nature (Robbins 2012:97), this thesis, despite its emphasis on social theory, is likewise somehow stuck in this ambivalence. More concretely, I have criticized existing research on ASGM in P-Z for reducing the problems to a version of ¨a tragedy of the commons¨ (Hardin 1968), where small-scale and artisanal miners are to blame for the environmental degradation. At the same time, I have taken this research at face-value and let it inform this thesis on both mining processes and environmental consequences. While this take may appear as contradictory – especially in relation to my critical comments about the role apolitical research plays in rendering the problems technical – there is also an element of interdisciplinarity to this. Natural sciences, i.e. biology, toxicology, geology, have an important message to convey in the context of ASGM in P-Z, and the message is powerful, perhaps too powerful in the sense that it has come to dominate the approach and narratives about what is going on here. Consequently, my approach to this has been to critically explore and contextualize this research, confront it with Foucault's insight on knowledge and power, to say something about the social dynamics and the effects this has in relation to regulation.

Furthermore, besides Foucault, political ecologists (implicitly or explicitly) also relate to Heidegger and his notion of truth as something being "revealed" or an "unconcealment" (Weiner 2001:72-3). Heidegger's view necessarily includes a(n) (un) conscious "masking" of reality by human activity and engagement that alienates humans from their own determinations (Descola 2013b). And while a political ecologist would normally follow Marx and the effects of capitalist alienation, a more philosophic inclined anthropologist (e.g. Wagner 1981) would venture into symbolism, intersubjectivity and the deep structures of intentionality. The two paths obviously share constitutive elements like the struggle with the nature-culture dichotomy and both seems to compromise with social constructivism at a certain level. The point however, is that the choice of which path to follow, whether grounded in materialism or intersubjectivity, has a profound influence on the process and the outcome of analysing social phenomena. Not only is this relevant for the choice of methods and analytical scope, but it generates specific meaning into the ways of conceiving the world and this apply as much to political ecologists as natural scientists, as the mining community in P-Z and the actors involved in regulating ASGM (cf. Law 2011).

Hence, I argue that self-reflectivity should be an important ingredient in the political ecologist's approach, not only as a humble stance amid other scientific or cultural explanations, but also to illustrate how one thinks while analysing a case such as this. Once this is achieved or while this is taken into account, however, I argue that the critical perspectives from political ecology are meaningful and necessary (cf. Robbins (2015)

characterization of political ecology as a ¨trickster science¨).

Concluding remarks

Unsurprisingly, power relations are highly influential to the regulation of ASGM in P-Z. One could almost say that power in all its intricacies and different shapes, dictates the state of affairs. Yet, as we have seen, power is not a tangible thing, but rather a disposition existing among people in their relations. This chapter has attempted to nuance and enlarge a conceptualization of power as an attribute of a person. While theory on power helps to expand an understanding of power and how it may work, I have also illustrated how this articulates in power relations in P-Z (i.e. the semantics). While recurrent narratives in resource governance analyses tend towards portraying local people being marginalized by corporations and the State, I have shown that this is only partially true in this case. Yes, it is possible to remain very critical about current Ecuadorian mining legislation, its enforcement in the field and the intimate links between the State and large companies (in this case ELIPE). Yet, as I have returned to emphasize several times, without an acknowledgement and a critical perspective on the internal hierarchy of the mining community, the analysis would be, quite frankly, wrong.

This argument is not only applicable to this analysis per se, but it echoes a tendency within political ecology, albeit in different degrees, to sympathize with local people as some sort of spinal reflex after reading and spending time in a scientific community with an explicit political orientation against neo-liberalism (or whatever we wish to call it). This is perhaps accentuated upon doing fieldwork amongst marginalized peoples. And I agree, ideologically I am totally in consensus, not only in relation to capitalism's materialist workings, but also regarding the effects of its hegemonic world-view. Yet, and this is my point in relation to both political ecology and studies of interlegality, we must not let this critical perspective obscure the possibility, or as in this case, the empirical observation, that local people in particular places are far from innocent players in the game for power.

Notes

[i] A random search on Google Scholar obtains: 5,6 million hits on *society*; 5,1 million on *culture* and; 3,4 million on *power*. Although it might be argued that this tells us little about the problems of defining these concepts, it does indicate an extensive use of them.

[ii] Bourdieu's most famous analysis of this is, of course, *Distinction* (1984), his treatise on the judgement of taste and how this is traceable to the hierarchy of social class.

[iii] This invitation is far from a secret, but quite contrary part of Ecuador's strategy to profile itself as a nation with good opportunities for mineral extractivism. See introduction of this thesis.

[iv] Recently, by April 2016, there has been a major labor strike at the facilities of ELIPE Ltd. According to ARCOM officials and other sources in site, the company had avoided fiscal payments for a prolonged period, avoided paying their workers for since January. This last fact had eventually led to a collective walk-out by the workers. Unsurprisingly and echoing the statements made by SADCO in its time, the cause for these problems according to the company itself, is due to a decline in gold content in extracted material and the lack of capacitated personal to work the mine (see: http://www.dynastymining.com).

[v] This last remark is essentially because of my scepticism to the logics of corporate social responsibility (CSR), which is used rhetorically to legitimate all extractivism in Ecuador, and an approach that will unquestionably create more tensions in P-Z (cf. local miners' opposition against the privileges of ELIPE). More generally, my scepticism is simply due to the fact that I have still to come across any happy processes of CSR, nor any happy endings for that matter (especially if we are to take all externalities (human and environmental) into account).

[vi] The ILO convention 169 is a convention on the rights of indigenous and tribal people from 1989 established in United Nations' International Labour Organization. It was ratified by Ecuador in 1998. See: http://www.ilo.org/global/topics/equality-and-discrimination/indigenous-and-tribal-peoples/lang--en/index.htm

[vii] There are several parallels to this. Consider for instance the prohibition on smoking in public spaces which has proved quite efficient, at least in Nordic countries, and the implementation of this law in its beginning – i.e. the difference between smokers and non-smokers regarding their conceptualization of the prohibition. Moreover, in the context of Norway, one might see this in analogy with the governmental attempt to conserve a meagre wolf population, which farmers consider as a provoking politics, stemming from urban environmentalism. For an Ecuadorian example, the original writings of Simon Thomas (2009) describes how indigenous customary laws interact with formal penal legislation. A point in this regard would be that indigenous customary law on, for instance, the procedures of punishment (cf. corporal punishment and social exclusion), may contrast very much with popular non-indigenous moral beliefs in relation to ¨correct punishment¨, which is largely shaped by Western constructions of Law and Rights.

[viii] See for instance: Comaroff & Comaroff (2008) about disorder and overlapping laws in the post-colonies; Castree (2015) on capitalism and the Marxist critique of political ecology; Bakker (2015) on neoliberalization of nature; Harvey (2012, 2006) on neo-liberalism and its effects; and Latorre et al (2015) following Harvey on cases of ¨accumulation by dispossession¨ in Ecuador.

Epilogue

There is a phenomena occurring when one submerges into a topic or a problem for a long time. What happens is that the person writing or creating something about something, begins to interpret the surroundings, especially what one reads, hears and sees in news and popular culture, into his/hers work. I am unaware to what extent this is a documented psychological occurrence or simply a reaffirmation of Levi-Strauss' semiotics saying that humans tend to think in analogies (1985), but I assume that this frequently happens to scholars writing up on their material. I say this, of course, because I simply can't resist to invoke one of mine. In a strict sense, this may be one of those darlings that should be washed out of the final product, but I'll give it a go here in the end anyway.

In 1972/1973, Jimmy Cliff was the main contributor to the iconic sound track to the movie called ¨The Harder They Come¨. The film and soundtrack evolves around the theme of small-time hustling in Jamaica and the dream to one-day, break through out of poverty into wealth and respect. This much celebrated album comprises reggae music in its very beginning and the songs are a compilation of recordings between 1967 and 1972. I have the album in the shape of an LP and I listen to it occasionally. The last months however, the songs have somehow merged into my work with this material. And this is why:

It first struck me because the title track ¨The Harder They Come¨ resonates with what many people in P-Z told me about ¨miners getting hard¨ (*se hacen duros*). As we have seen, at least to some extent throughout this thesis, the nature of mining involves very hard work both physically and mentally for the miners engaged in this. Today as in the past, miners cope with extreme working conditions that accordingly, has a ¨hardening¨ effect on their character in the long run. This also includes a clear masculine constituent in the nature of mining, a trait that

occasionally surfaced in utterance saying that ¨mining is for real men¨[i]. People told me that I had to understand this in order to correctly interpret the mining activity and its consequences. Concurringly, I believe that this ¨hardening of the self¨, besides representing an adaption to the tough working conditions, can be extrapolated to include miners' marginal interest in the environmental/health consequences of their work. Bluntly put, if miners are willing to sacrifice their own health, they are also willing to sacrifice the environment. There are exceptions to this – some miners are indeed more concerned about both the environmental and human health consequences – but the dominant attitude that make miners endure their work is represented by a sturdy and tough masculine character. Yet, regarding the aspect of success, there is an act of balance to this, one which resonates with Jimmy Cliff singing: *the harder they come, the harder they fall.* The last part (*the harder they fall*) echoes with Claudio (chapter 4) saying that the gold will not appear if one has too strong ambitions in the search for it. Hence, if one is too hard and enduring, one is likely to fall.

The second analogy from Jamaican shanty, township struggle is more brute. The lyrics of the whole song titled ¨You can get it if you really want¨ resonate all to clearly with the proverb written on a wall up-town Portovelo saying ¨Don't be afraid of loosing, be afraid of not trying¨ (see chapter 3). *But you must try, try and try, try and try…you succeed at last, hmm, yeah,* sings Jimmy, in analogy with miners' hope and investments into the mines. I elaborated briefly on this in chapter three, and here I simply underscore the same point: the continuity of mining in P-Z is, in itself, a testimony of the tenacious, collective force towards mining as a livelihood. Miners never give up, despite facing all sorts of problems, but, in the words of Kris Lane (as we recall from chapter 1): ¨…regardless of outside interests, Zaruma's hard-core miners soldiered on¨ (2004: 79). I regard this collective force to be well alive in P-Z today, and as an important dimension to why governmental regulation has a serious problem towards becoming a *governmentality* in the Foucauldian sense.

Finally, Jimmy Cliff sings a song titled ¨Sitting in Limbo¨. Let's just quote him (besides, the song itself is just a mouse click away, for the curious reader):

Sitting here in limbo
But I know it won't be long
Sitting here in limbo
Like a bird without a song

Well, they're
Putting up resistance
But I know that my faith
Will lead me on

As we can recall from my use of Murray Li's term ¨permanent deferral¨, the governmental will to improve ASGM in P-Z is notoriously and stubbornly about improving the technicalities of mining and its processing. The political-economic dimension that sustains the current configuration that, in turn, produce the controversial mining praxis, is notoriously ignored or circumvented by governmental representatives. Accordingly, the political economy resembles a taboo, or as suggested in chapter four: an elephant in the room that is never addressed. As we have seen, the reasons for this are several, but dominantly an effect of a national legal system that: 1) render the problems as technical issues, and 2) is well situated in the dogma of corporate social responsibility. This combination leads to a governmental preference towards for the largest mining companies in P-Z and accordingly, incentivizes exploitative entrepreneurialism and a development towards large-scale mining. Where does this leave thousands of artisanal miners? Correctly, in a state of limbo, ¨like a bird without a song¨. Hence, the analogy is that: *They're* (the government in alliance with big companies) *putting up resistance* (to the habitus of informal mining), *but I know that my faith* (autonomy) *will lead me on*. Or from a governmental perspective: *They're* (artisanal and small-scale miners) *putting up resistance* (to mining legislation and our will to improve), *but I know that my faith* (corporate social responsibility) *will lead me on*.

I started this thesis by asking *How does current regulation impact and influence on ASGM in P-Z?* After getting into the matter, I should perhaps turn the question on the head and say something about how ASGM in P-Z impacts and influence regulation? At least, the thesis has stressed that there is much complexity to the process of interlegality in a context of *de facto* legal pluralism. The inclination to turn the question upside down, however, comes from the observation that despite the governmental will to improve, control and regulate the conditions of mining, the result is equally that of a continued environmental degradation with few substantial improvements. This may be a negative conclusion, but it reflects an empirical reality that is hard to ignore. Yes, there has been a process of formalization, yes few, if any children currently engage in mining, yes there is an increased presence of both law enforcers and people telling what the miners should do, yes there are on-going plans to re-structure the sector (a pipeline and an industrial park), but what is actually the outcome? I agree that there are some good things to hang on to, especially regarding the eradication of child labor. But, given what has been presented in this thesis, I remain sceptical towards the manifestation of significant improvements, at least in the short term. The reader has heard my reasons for this several times by now, most thoroughly accentuated in chapter three and four where I illustrated the act of enforcing mining legislation and the responses it creates. The problem is

political and it involves, as always in cases of environmental degradation and resource governance, asymmetric power relations. Someone is making quite a lot of money on this, and even without opposing the accumulation of wealth as necessarily a bad thing, the costs are characteristically, paid by the environment and marginalized people. This is the inherent nature of corporate social responsibility. Yet, as I have shown, its more complex than this. ASGM do sustain a relatively large population in the highlands of El Oro province of which P-Z is the centrifugal centre. However, the majority of these miners engage in mining as a form of subsistence and while they are more flexible than larger companies in the sense that they engage in other work in parallel with mining, the sector as a whole is very vulnerable to fluctuations in gold prices.

In contrast to the dominant narrative presented by apolitical research on the controversial use of mercury, this thesis has made a point towards nuancing the political claims among the stakeholders. Epistemology and world-views are themselves politically imbued. They are ¨regimes of truth¨, epistemology in relation to knowledge and beliefs, world-views in relation to identity and ontology, with normative constituents that impinge on the divergent articulations of reality. This in turn, heavily influences the arenas of regulation and mining politics where these regimes interact. Accordingly, the question is not about a collision of objective and irreducible claims as presented by stakeholders, but that of ideology, identity and affiliation to the problem. In sum, this points to my introductory paraphrasing of Le Billion in which he emphasizes ¨the importance of situated perspectives¨ (2015: 604).

Regarding the path of future research on ASGM in P-Z, some possibilities were outlined in the limitations to this thesis (see introduction). Environmental economics, institutional theory and other strains of political ecology are promising points of departure towards a strengthening of the social scientist perspective to this case of resource governance. Likewise, perspectives on power and the dimension of decision-making could by invoked to inform and present new narratives coming out of this context. In essence, I argue that the field is in a deep need to be analysed by social scientists, regardless if it is from anthropology, sociology or political science. Accordingly, I think its fruitful to begin by recalling the question posed by the Spanish navigators, Jorge Juan and Antonio de Ulloa, in the 17th century: ¨Why should the 'naturally indolent' campesinos of the region slave away underground, they asked, when nature made subsistence so easy?¨ (Lane 2004: 75) We can skip the ¨natural indolent¨ part, but maintain the question because it addresses ¨the culture of extractivism¨ (Scott 2010), which is a key cause to answer why this context has been rendered

pollutable and subsequently, that the emerging problems have been rendered as technical issues.

Finally, my critical approach to ASGM in P-Z is not an unanimously opposition towards mining all together. Rather, it reflects an ambivalence. I acknowledge mining as a form of subsistence, but my pessimism begins when this develops into a capitalist regime towards exploiting nature and people for profit that accumulates in a few hands. In this regard, I argue that we need to take a step out of the capitalist rationale that drives ASGM and consolidates in a seemingly coherent pro-mining attitude. After all, there are alternatives to mining, and the only way for them to emerge as viable alternatives is by nurturing them as alternative ideas. Other worlds are possible (cf. Escobar 2005a), and my suggestion is to begin by confronting the power relations that organize the sector, and to ask the miners and people of P-Z what kind of future they want for their children.

Notes

[i] Scott depicts an analogy to this when referring to a bumper sticker used by miners in the Appalachian coalfields. The sticker says: ¨real coal miners do it deep in the dark¨ (2010: 217), that along with the masculine meaning, also carries a sexual connotation.

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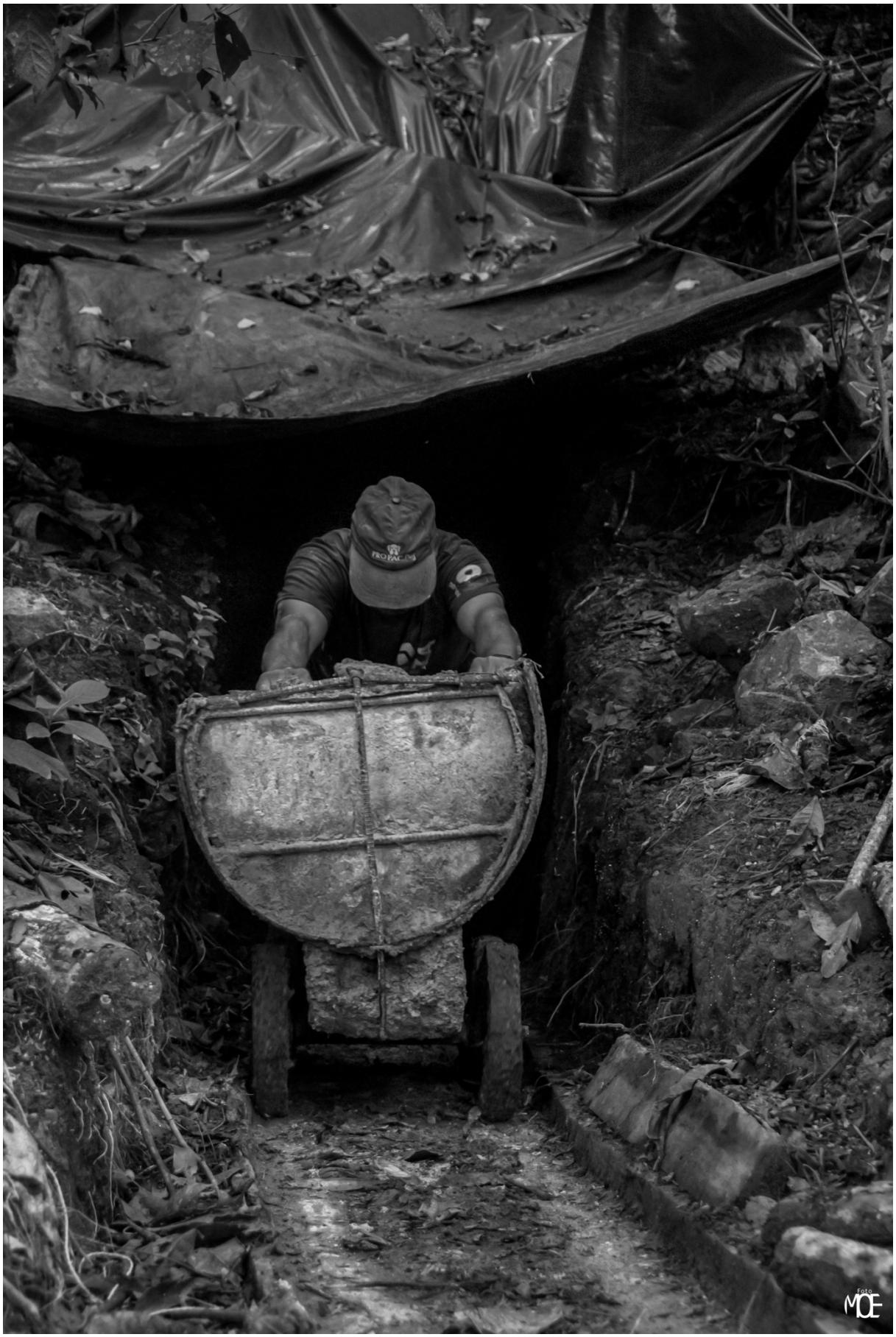
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