

**DISCOURSES OF DEVELOPMENT AND DISASTERS:  
SHOCKS AND RESPONSES IN PHILIPPINE MINING**

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## ABSTRACT

This study investigates the extent to which a society like the Philippines can generate meaningful responses to mining disasters. Mining disasters amplify long-standing conflicts that have been hounding the industry, where different views about development, politics, and the environment clash. Using three different cases of mining disasters in Marinduque island, I examine how responses are conditioned by the configuration of dominant discourses. I identified this configuration by studying the deeper history of discourses that surround Philippine mining. This study also identifies two environmental discourses in non-industrial settings, indigenous sustainability and a non-industrial cornucopian discourse, which expands existing environmental discourse taxonomies. I evaluate the adequacy of response to disasters through reference to the idea of ecological reflexivity, a capacity to recognise environmental issue, rethink core values and practices, and respond by changing values and practices. In mining, ecological reflexivity might be sought in the shocks generated by disasters. But the degree to which reflexivity is possible is conditioned by the deeper history of discourses as well as their contemporary configuration. This study applies an environmental discourse approach that shows the protracted influence of the Promethean discourse in policies and institutions leading to mining disasters. In mining, the Promethean discourse means using capital-intensive technology to enable the perpetual exploitation of minerals while downplaying environmental risks. Promethean thinking was consistent with or went alongside state intervention, crony capitalism, and oligarchic patrimonialism. Another contribution of this study is in the application of ecological reflexivity, a transformative ideal. Green political discourse can help set conditions for ecological reflexivity, because it recognises complex and vulnerable ecosystems and the value of inclusive and participatory governance. Consistent with green politics, the local environmental movement anticipated these disasters and mobilised in their aftermath, helping set conditions for ecological reflexivity. However, an institutional response that varied from resistant to weak and inconsistent severely constrained reflexivity. The study offers a different approach to the study of mining disasters and the conflicts they amplify. The findings suggest some pathways to veer away from entrenched dominant discourses and practices that lead to mining disasters.

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## List of Acronyms

ADB—Asian Development Bank  
APMI—Australasian Philippines Mining Incorporated  
ASOG—Ateneo University’s Ateneo School of Governance  
ATM—*Alyansa Tigil Mina* or Alliance against Mining  
BAYAN—*Bagong Alyansang Makabayan* (National Patriotic Alliance)  
CAMC—Climax Arimco Mining Corporation  
CBRP—Calancan Bay Rehabilitation Program  
CEC—Center for Environmental Concerns  
COMP—Chamber of Mines of the Philippines  
DAO 02—DENR Administrative Order No. 02  
DENR—Department of Environment and Natural Resources  
DNR—Department of Natural Resources  
DOH-UP—Department of Health and the University of the Philippines  
ECA—Environmentally Critical Areas  
EGF—Environmental Guarantee Fund  
EIA—Environmental Impact Assessment  
EIM—Environmental Investigative Mission  
EIS—Environmental Impact Statement  
EMB—Environmental Management Bureau  
EO 15—Executive Order No. 15  
EO 192—Executive Order No. 192  
EO 279—Executive Order No. 279  
EO 291—Executive Order No. 291  
EPA—Environmental Protection Agency  
FTAA—Financial and Technical Assistance Agreement  
IMF—International Monetary Fund  
MACCEC—Marinduque Center for Environmental Concerns  
MGB—Mines and Geosciences Bureau  
MMC—Marcopper Mining Corporation  
MMT—Multipartite Monitoring Team  
MTPDP—Medium-Term Philippine Development Plan  
NCDCS—Non-Communicable Disease Control Service  
NEDA—National Economic and Development Authority  
NEPA—National Environmental Policy Act  
NEPC—National Environmental Protection Council  
NGO—Non-Government Organisation  
NPCC—National Pollution Control Commission  
NSR—New Source Review  
OGPI—OceanaGold Philippines Incorporated  
PAB—Pollution Adjudication Board  
PD 461—Presidential Decree No. 461  
PD 463—Presidential Decree No. 463  
PD 984—Presidential Decree No. 984  
PD 1151—Presidential Decree No. 1151  
PD 1305—Presidential Decree No. 1305  
PD 1586—Presidential Decree No. 1586  
PDI—Placer Dome, Inc.

PDTS—Placer Dome Technical Services (Philippines)  
PEISS—Philippine Environmental Impact Statement System  
PMIEA—Philippine Mineral Industry Environmental Awards  
PNE—People’s Network for the Environment  
PSSD—Philippine Strategy for Sustainable Development  
RA 7160—Republic Act No. 7160 or Local Government Code of 1991  
RA 7568—Republic Act. No. 7568 or National Integrated Protected Areas System Act of 1992  
RA 7729—Republic Act No. 7729 or Excise Tax Act of 1994  
RA 7942—Republic Act No. 7942 or Mining Act of 1995  
RA 8731—Republic Act No. 8371 or Indigenous Peoples’ Rights Act of 1997  
SRA—Social Reform Agenda  
STD—Submarine Tailings Disposal  
UN—United Nations  
UN DHA—United Nations Department of Humanitarian Affairs  
UNEP—United Nations Environmental Programme  
USGS—United States Geological Survey  
WB—World Bank

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# Chapter 1

## Introduction

### 1. Background of the Study

Mining disasters are some of the most destructive incidents in contemporary times. In different parts of the world, mining disasters cost lives, bury villages, destroy livelihoods and properties, and ravage the environment (Garcia et al. 2017; Hyndman 2001; Lindon, Canare, and Mendoza 2014). Given the high costs of mining disasters, these tragedies are also critical moments for learning. Mining disasters prompt a re-evaluation of risks associated to material gains, and challenge dominant governance paradigms and state-society relations. These disasters draw attention to the impacts workers and communities experience as a result of mining operations. Mining disasters also amplify long-standing conflicts that have been hounding the industry, where different views about development, politics, and the environment clash.

At the heart of these conflicts, I argue, is an issue of environmental knowledge. In this study, I demonstrate how mining disasters reveal conflicting environmental discourses, embedded with knowledges about nature and natural relationships, that underpin the claims of major actors in industrial mining. Contemporary crises and disasters, as Boin (2009) argues, rupture dominant paradigms of thought and action. Modern disasters are more severe and insidious, as they transcend geographic, sectoral, and temporal borders (Boin 2009). For example, incidents of mine tailings dam failures, a common mining disaster, have been decreasing, but their severity and impacts have been worsening (Bowker and Chambers 2015). Disasters are strong messages that can prompt a rethink of old habits and bring forth changes. However, any such rethinking can be impeded by pathological path dependencies that build up or take for granted industrial society's social, political, and economic structures.

Usually, mining disasters—or the politics of mining in general—are analysed descriptively using the lens of political economy and geopolitics. Studies in industrial disasters look at responses that consider human welfare and the environment albeit in a limited sense. In this thesis, I argue that studying mining disasters from the perspective of environmental discourse generates richer understanding of the environmental dimensions of power dynamics that build

shared understandings about the disaster. A discourse approach is also useful to evaluate ecological governance using a transformative lens. If we want to seriously avert disasters, then a crucial part of reform should be the transformation of discourses that facilitates ecological reflexivity. By ecological reflexivity, I refer to the practice of listening to the Earth system and monitoring its condition, reconsidering core values, institutions, and practices, and responding to early warnings about potential ecological state shifts (Dryzek and Pickering 2019).

The empirical focus of this study are three mining disasters in the Philippines, a country considered to have one of the largest mineral deposits in the world. Each of these disasters presents a storyline that feature different discursive struggles about the environment and normative understandings preceding and resulting from the disaster. Through primary and secondary data analysis, my research finds that these cases present environmental discourses that largely promote pathological path dependencies that limit their ability to respond to the issues posed by mining disasters (Dryzek and Pickering 2019). At best, some more recent environmental discourses promote some components of ecological reflexivity in limited ways. The empirical chapters unpack the reasons for these path dependencies by using as well as expanding Dryzek's typology of environmental discourses.

The main concern of this thesis is the extent to which a society such as the Philippines can generate meaningful responses to mining disasters. I argue that the capacity for response is always conditioned by the configuration of dominant environmental discourses. This configuration can change with time, and a thorough knowledge of the deeper history of environmental discourses that surround mining in the Philippines is therefore necessary. I argue that effective response can now be captured by the idea of ecological reflexivity, and so a major concern of this thesis is with where ecological reflexivity might be sought. The shocks generated by disasters are promising places to look. But the degree to which reflexivity is possible is conditioned by the deeper history of environmental discourses as well as their contemporary configuration.

The starting point for my investigation is this **research question: How do environmental discourses influence responses to mining disasters in both the short- and long-terms?** There are three parts to this question.

- **Conceptual / empirical question:** What is an appropriate taxonomy of environmental discourses in non-industrial settings, and what configuration do we find in the history of mining in the Philippines?
- **Explanatory question:** How can we explain the conflicts in Philippine mining, especially in the aftermath of mining disasters, in terms of the evolution of the configuration of environmental discourses?
- **Normative question:** If effective response to disaster can be captured in terms of ecological reflexivity, to what extent does the configuration of environmental discourses promote or hinder ecological reflexivity?

I discuss each of these questions in this chapter. I briefly discuss the literature that engages or have yet to engage with these questions and provide an overview of how my thesis answers these questions. Then I present a more extensive discussion of the literature review on environmental discourses, natural resource conflict, and industrial disasters, and explain the gaps that this study's questions will fill in. After that, I present the scope and limitations of the study. In the last section, I explain the organisation of the subsequent chapters and how they relate to each other.

## **2. Conceptual / empirical question. What is an appropriate taxonomy of environmental discourses in non-industrial societies, and what configuration do we find in the history of Philippine mining?**

My thesis' conceptual puzzle lies in identifying the appropriate taxonomy of environmental discourses in non-industrial settings. Simply put, a discourse is a "shared way of apprehending the world" (Dryzek 2013, 9). That it is shared means that discourses are collectively constructed as well as contested. It comes from an "anti-essentialist ontology" which presupposes the existence of different constructions of social realities instead of a single reality that is indisputable due to natural laws (see Hajer and Versteeg 2005, 176). When it comes to the topic of the environment in general or environmental disasters in particular, "nature" is not "out there" independent of society but one that is co-produced through linguistic regularities shaped by political agents, rhetorical styles, and situated knowledges (Feint and Oels 2006). Discourse, in other words, is a reflection of relations of power and knowledge. They enable or constrain communication. They are entangled with material realities and therefore the distribution of resources. On the institutional level,

discourses shape the character of environmental policies and practices. Conceptually, studying environmental discourses can push the literature by questioning why some concepts about the environment endure while others change over time.

The use of environmental discourse is scant in the scholarship on industrial disasters. The few existing studies focus on human welfare. For example, a study on the aftermath of the 2001 Toulouse chemical plant disaster in France focuses on the livelihood-related discourses of workers (Blanc, Mègemont, and Baubion-Broye 2007). Another study on the aftermath of the 1984 Bhopal gas disaster in India focuses on official and subaltern discourses and the capacity of a dominant discourse to exclude other voices, especially the vulnerable (Hanna 2007). Neither of these studies place the environmental dimension in the foreground, which makes the character of discourse analysis predominantly an anthropocentric undertaking, despite the central role of the environment in these issues. Such gap in the literature is one motivation for this thesis, which is to demonstrate that it is analytically necessary to map the configuration of environmental discourses in mining disasters. I turn to the field of environmental politics, particularly to Dryzek's (2013) environmental discourse taxonomy as a starting point. I expand this taxonomy to non-industrial settings and identify some localised features of the discourses in Philippine mining.

### **3. Explanatory question: How can we explain the conflicts in Philippine mining, especially in the aftermath of mining disasters, in terms of the evolution of the configuration of discourses?**

This research, primarily, offers an understanding of environmental knowledges underpinning conflicts in extractive industries like mining. I demonstrate this by analysing extractive industry conflict with a focus on disasters, using an expanded environmental discourse taxonomy.

An environmental discourse approach, I argue, is an important intervention in the current scholarship on mining disasters. Social science scholarship on extractive industry conflicts, particularly in Philippine industrial mining<sup>1</sup>, mostly use the related perspectives of political

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<sup>1</sup> The term 'industrial mining' is used here and in the rest of the thesis based on technological classification. Industrial mining began alongside industrial society with the mechanisation of the mining sector, particularly with the introduction of the steam engine and other modern machines. Industrial mining contrasts with non-

economy and geopolitics, whether explicitly or implicitly (e.g. Haslam and Hiedrich 2016; Kirsch 2006; Lopez 1992; Le Billon 2017; Hendrix and Noland 2014). These fields of research are important to understand conflicts in the establishment and growth of industrial mining but are they unable to fully capture environmental knowledge issues that also underpin these conflicts. In the literature review below on political economy and geopolitical research on resource conflicts, I explain how an environmental discourse approach can highlight the environmental dimension of political economy and geopolitical explanations.

#### **4. Normative question: If effective response to disaster can be captured in terms of ecological reflexivity, to what extent does the configuration of environmental discourses promote or hinder ecological reflexivity?**

In the concluding part of this thesis, I make a case for ecological reflexivity because, if we want to avert mining disasters in the future, a radical transformation of mineral resource governance is needed to veer away from entrenched dominant environmental discourses and practices that lead to tragic events and consequences. In this thesis, I will make a case for the role of ecological reflexivity as a responsive, timely, and normatively defensible virtue in governing societies that are vulnerable to ecological danger. My position is that the Anthropocene epoch accelerated human activities (Crutzen 2002) that contributes to changes in the Earth system. Industrial mining is an important example of such human activity which needs to be evaluated in transformative terms.

I developed this normative position by studying Philippine mining disasters. The use of ecological reflexivity departs from previous normative evaluations of industrial disasters that consider human welfare and the environment, albeit in a limited way. Some examples are studies on industrial disasters that focus on social inequality (Curran 1993; Lindon, Canare, and Mendoza 2014) or environmental regulatory reforms (Garcia et al. 2017; Bravante and Holden 2009) that do not adequately interrogate the economic commitments of industrial

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industrial mining that uses rudimentary methods through hand tools and simple machines powered by humans or animals. This categorisation of mining based on technology can have some overlap with a common categorisation based on the size of activity or production, i.e. small-scale, medium-scale, and large-scale. Medium-scale and large-scale mining operations are likely to be industrial mining. But some small-scale mining may be non-industrial, i.e. using basic methods, and others may be industrial, i.e. using modern machines. While the mining disasters analysed in this study were due to large-scale mining, the term industrial mining is used in this study because it is referenced on industrial society, which is the same reference of major works on environmental discourses (Dryzek 2013; Litfin 1995; Hajer 1997; Epstein 2008).

society. These commitments are inscribed in what Dryzek and Pickering (2019) call as pathologically path dependent practices and institutions (states, international organisations, and market) that arose near the end of the Holocene epoch, a period of about 12,000 years of a stable Earth system. The pathological path dependencies of the Holocene epoch can be characterised by the dominance of the centralised administration, institutional expert knowledge, and the commitment to enduring economic growth. Because of this pathological path dependency, the normative evaluations underpinning existing scholarship on industrial disasters cannot adequately address the environmental challenges we face in the Anthropocene epoch. By using ecological reflexivity as a normative framework for analysing Philippine industrial mining, this study contributes in discussion of the role of environmental discourse in shaping a transformative future for extractive industries.

### **5. Literature review: Industrial disasters and environmental discourses**

The analysis of Philippine mining disasters using environmental discourses can provide conceptual contribution to scholarship by expanding the environmental discourse taxonomy and demonstrating how environmental discourses interact with local settings.

The use of discourse in studying industrial disasters is limited. The few existing studies focus on human welfare. A discourse analysis of workers' interviews after the 2001 Toulousé chemical plant disaster in France looked at the relationship between social memory of the company and workers' livelihood future given the impending closure of the plant (Blanc, Mègemont, and Baubion-Broye 2007). Through discourse analysis, the study showed that the outlook of employees anticipating job loss "can be better understood through an analysis of the memory processes of recalling, valuing and forgetting a history which is both individual and collective, involved in this career transition" (Blanc, Mègemont, and Baubion-Broye 2007, 739). In the aftermath of the 1984 Bhopal gas disaster in India, Hanna (2007) explained the marginalisation of vulnerable voices through discourses. The official discourse was produced by government with some influence from the corporation. Hanna (2007) found out that the official discourse not only sidelined the environmental and contamination issues but also excluded opposing voices by denying victims' access to scientific knowledge that was used to support the official discourse.

These works on industrial disasters that analysed discursive practices (Blanc, Mègemont, and Baubion-Broye 2007; Hanna 2007) do not highlight the environmental dimension of the disaster. In this study, I focus on the environmental dimension of mining disasters by turning to the field of environmental politics, particularly to Dryzek's (2013) environmental discourse taxonomy as a starting point. I expand this taxonomy to non-industrial settings and identify some localised features of the discourses in Philippine mining.

The broader field of environmental politics provides more evidence of the value of analysing discourses (Hajer 1997; Fischer and Hajer 1999; Litfin 1995), for example on issues surrounding acid rain in the Netherlands (Hajer 1997), sustainable development (Fischer and Hajer 1999), and international agreements on the ozone layer (Litfin 1995). Major works in environmental politics that used a discourse approach provide in-depth accounts of specific environment discourses, such as ecological modernisation (Hajer 1997), precautionary discourses (Litfin 1995), and the anti-whaling discourse (Epstein 2008). Although these are rich accounts of specific environmental discourses, I used Dryzek's taxonomy for its comprehensiveness and breadth that is suitable to the scope of this study.

Dryzek's taxonomy was first introduced in his book *The Politics of the Earth* (1997) where he advanced an analysis of environmental affairs "by promoting critical comparative scrutiny of competing discourses of environmental concerns" (Dryzek 1997, 20). Dryzek's emphasis on the competing character of discourses is one of the reasons why I find this approach fitting for my study of dominant discourses in mining. As he observes, "the more complex a situation, the larger the number of plausible perspectives on it," and therefore a systematically grounded analysis of how these discourses compete is warranted (Dryzek 1997, 9). The breadth of my scope covers a number of perspectives on mining through the years and Dryzek's taxonomy and elements provide suitable analytical tools for this study.

One may ask why use Dryzek's discourse approach over other discourse approaches in examining environmental affairs. To answer this, I contrast Dryzek's approach with another popular discourse approach, the Foucauldian perspective. Each approach highlights either the enabling or the constraining influence of discourses on the agency of actors. On the one hand, Dryzek and other discourse scholars (Hajer 1997; Hajer and Waagenar 2003; Fischer and Forester 1993) recognise the agency of proponents of discourses and counter-discourses, while also recognising constraints. In this regard, actors can be calculating, strategic, and self-

aware. On the other hand, Foucault and his followers view dominant discourses as hegemonic, with subservient subjects willing to be governed, often somewhat unknowingly, by the power of dominant discourses. Foucault (1991) called this phenomenon ‘governmentality’. When applying governmentality to environmental issues, Luke (1995) coined the term ‘environmentality’ where counter-discourses to industrialism are ultimately seen to promote industrial society. Raymond Bryant (2002) and Wolfram Dressler (2014) used Foucault’s governmentality perspective to explain discursive practices on environmental issues in the Philippines. The findings of Bryant (2002) and Dressler (2014) show how the environmental discursive practices of non-state actors, specifically NGOs and local residents, can promote the internalisation of state control.

Dryzek (2013) does not agree with a hegemonic perspective on industrialism. Instead, he sees the rise of the environmentalism in the 1960s and the variety of counter-discourses to industrialism that emerged as indicative of the breakdown of industrialism’s hegemony (Dryzek 2013). I take on a similar approach and acknowledge the agency of actors in producing discourses and counter-discourses in Philippine environmental politics.

While Dryzek’s taxonomy provides inspiration to my conceptual work, I argue that his approach needs to be critically appropriated for my analysis to be sensitive to the particular context of Philippine mining, which takes the character of a non-industrial society. Unlike its neighbouring countries – the so-called newly industrialised economies – the Philippines’ industrial drive “failed to take off” (Ofreneo 2015, 111). While there are mining industries in the Philippines, the socio-economic context remains distinctive from the historical trajectories of countries that had their moments of industrialisation which in turn reshaped the character of social relations (see Bello and Rosenfeld 1990). Moreover, taking a longer view of mining discourses requires a taxonomy that can give prominence to non-industrial discourses that have provided alternative ways to imagine nature-human relations. Like many other scholars (Hajer 1997; Fischer and Hajer 1999; Litfin 1995), Dryzek’s taxonomy focused on industrial societies currently committed to perpetual growth and material welfare. This focus is understandable given that the articulation of environmental discourses has been pronounced in relation to industrialism. However, this limits the classification of environmental discourses and, in particular, excludes discourses that proliferated before industrialisation and discourses that enabled the establishment of industrial society.

To remedy this, I use Dryzek's approach as a starting point to orient myself with possible categories of environmental discourses. I traced the genealogy of discursive conflicts in Philippine industrial mining, punctuated by contemporary disasters. In the course of my empirical analysis, I observed the emergence of discourses that do not fit Dryzek's taxonomy, which signalled for the need to introduce new categories. I propose a non-industrial indigenous sustainability discourse and nonindustrial cornucopian discourse as pertinent storylines that shaped the contestation of discourses in a non-industrial society. As a caveat, these proposed discourses are modest contributions as they were only discussed in Chapter 3 during the pre-colonial and colonial periods of Philippine mining.

**5.1. Indigenous sustainability discourse.** Dryzek (2013) recognised the possibility that the concept of sustainability can be traced to the traditional practice by indigenous people of replenishing their local resources in a non-industrial context. Linking this idea to some descriptions of indigenous worldviews (L. T. Smith 2012; Niezen 2003; Cadena and Starn 2007; Rodil 1992; Schlegel 1994; Edgerton 2008), I propose an indigenous sustainability discourse characterised, among other things, by close nature-human relations and subsistence use of natural resources. This is based on my historical research on Philippine indigenous societies, particularly in the Spanish and American colonial periods. The notion of 'indigenous' in this proposed discourse does not apply to all Filipinos. In the Philippines, indigenous peoples is a political identity marked by fierce resistance to subjugation during colonial contact.

**5.2. Non-industrial cornucopian discourse.** I found the taxonomy of Dryzek insufficient to describe a discourse (that I call non-industrial cornucopia) followed by Spanish colonial mining prior to the full development of industrial mining. The Promethean discourse accompanied the full development of industrial mining. The Promethean discourse places "unlimited confidence in the ability of humans and their technologies to overcome any problems – including environmental problems" (Dryzek 1997, 53). It presupposes a cornucopia or an abundant supply of natural resources that denies any limits (to distinguish this from my proposed discourse, which I label non-industrial). The Promethean and cornucopian discourses have a prominent place in Dryzek's taxonomy. Situating their origins in the industrial revolution, the discourse of capitalist growth and extraction of natural resources from colonies had an enduring legacy in liberal capitalist systems which assumed growth and development are free

from environmental constraints. My empirical research, however, finds departures from this narrative. I argue that the peculiarities of the Spanish colonial period from the sixteenth to the nineteenth century offers a nonindustrial cornucopian discourse in terms of commitment to labour-intensive technology and the absolute denial of resource scarcity.

Taken together, the indigenous sustainability and non-industrial cornucopian discourses can appropriately characterise some of the historical discursive conflicts leading to the establishment of Philippine industrial mining and the continued growth of the industry. The conflicts over territories and natural resources are tied to assumptions about human-nature relations that can call for the stewardship or domination of nature. As with most discourses, these were not explicitly articulated and were often entrenched or widely accepted, whether in a local or a broader scale.

Aside from expanding the taxonomy, critically appropriating the discourses to the Philippine context also revealed local features of the discourses that were not included in Dryzek's discourse features. For example, strong state intervention at times (rather than reliance on the market to promote innovation) went alongside the Promethean discourse. This also contributes to scholarship that applies an environmental discourse approach originating from European or North American contexts to developing countries. This is apparent in the application of a Foucauldian perspective on forest policies set mostly in developing countries (Winkel 2012), including the Philippines (Bryant 2002; Dressler 2014). The findings highlight the hegemony of colonial discourses and state control in forest policies (Winkel 2002; Bryant 2002; Dressler 2014). This study offers new insights by applying Dryzek's approach (2013) that can also show the agency of actors involved in the formation of environmental discourses and counter-discourses.

## **6. Literature review: natural resource conflict and environmental discourses**

Natural resource conflicts are often explained using the perspectives of political economy and geopolitics. By analysing natural resource conflicts surrounding Philippine mining disasters from the lens of environmental discourses, I can highlight the environmental dimension of political economy and geopolitical explanations.

**6.1. A political economy** approach views the “economy as an important part of a social whole and requires tracing in detail the links between economic, political and social developments” (Browning and Kilmister 2006, 2). There are variants to this approach but commonly, it analyses contestations, and distribution of power and resources, and their significance to development. It can also look into the implications of the need for conflict resolutions and the way they are resolved for economic outcomes (Drazen 2002).

In the context of extractive industries, political economy scholarship can be understood in two interrelated ways. The first is to understand the *relationships of conflicting parties*, and the second is to understand the *development paradigms* underpinning these conflicts.

**6.1.1.** The *relationships of conflicting parties* can be summarised into two categories. The first is *intra-elite competition*, and the second one is *elite versus non-elite conflicts*.

*Intra-elite competition* among political economy elites involves exporting developing states, importing developing countries, and large corporations often based in developed countries who are supported by their states (e.g. see essays in Haslam and Heidrich 2016). These powerful actors compete among themselves in their desire to secure a bigger portion of resource revenues.

When it comes specifically to the case of Philippine mining, the political economy literature on *intra-elite competition* (Lopez 1992; Camba 2015) that influenced mining development shows that the economic interests of elites interacted with nationalist policies, and the ‘politics of plunder’ (Aquino 1999) and crony capitalism (Kang 2002; Manapat 1991) during the dictatorial regime of Ferdinand Marcos, Sr. (1965-1986).

The mining industry association split into two from 1952 until 1975. The Philippine Gold Producers Association was formed in 1952, followed by the Base Metals Producers of the Philippines two years later. For about two decades, each industry association was lobbying separately for its interests (Lopez 1992),

instead of working together to pursue common goals. I describe this episode as intra-elite competition because gold producers and base metal producers felt that they had different needs from government that required different intensities of lobbying. Gold producers formed a separate association to promote their interests more aggressively given their difficulties in reviving gold production compared to the flourishing copper sector. Strong lobbying for government support by gold producers was necessary as they struggled to revive production. The lobbying efforts of gold producers paid off as lawmakers passed subsidy policies for the sector. This competition ultimately manifested as a division within the industry lobby association. One of the major contributors to the division was the difference in demand for each mineral after the war. Lopez (1992) showed that gold producers struggled to revive their industry after the war in large part due to the low price of gold in world market compared to the increasing cost of gold production. But this was not the case for copper producers who enjoyed hefty investments because of post-war reconstruction demand for copper that drove up prices. With favourable market conditions for copper, Philippine copper producers flourished after the war.

Nationalist policies also contributed to intra-elite competition between domestic and foreign owners of major mines. Under American colonial rule (1898-1941), when the process towards the independence of the colony started in 1935, nationalist policies were enacted in mining that restricted the operation of foreign-owned mines in the country (Lopez 1992; Camba 2015). This threat to existing American-owned major mines was countered by their successful lobbying for exemption from the law (Habana 2001). During the dictatorial regime of Ferdinand Marcos, Sr. (1965-1986), intra-elite competition between domestic and foreign owners continued as the Marcos regime pursued nationalist state-led development of industrial mining (Lopez 1992; Camba 2015). This development paradigm was detrimental to majority foreign-owned mines, most of which trace their origins back to the American colonial period. A caveat to this is that foreign investors still had a significant role in the mining industry as minority shareholders in most big mining companies (Camba 2015).

The ‘politics of plunder’ (Aquino 1999) and crony capitalism (Kang 2002; Manapat 1991) under Marcos contributed to intra-elite competition between new and old elites within the mining sector. The plunder of state resources by Philippine political actors had been a phenomenon prior to Marcos, “with the difference that one ruler was appropriating a much larger proportion of the state apparatus toward the service of his own private interests” by “pursuing a program of selective expropriation, creation of export monopolies, and promotion of favored associates, or “cronies,” (Hutchcroft 1991, 415–16). The Marcos regime supported the growth of the mining industry, particularly the further development of mineral processing (Lopez 1992). However, these advancements in the industry mostly favoured the new elites, i.e. Marcos and his cronies (Aquino 1999), who gained control of major mining companies (Lopez 1992) at times to the detriment of established mining elites. The *intra-elite competition* literature shows that the political system at one point may have disadvantaged the mining industry (Camba 2015) or favoured domestic mining owners over foreign ones (Lopez 1992; Camba 2015), but, ultimately, the colonial state and Philippine state often supported industrial mining as an instrument for national economic growth.

Meanwhile, *elite versus non-elite conflicts* shows the opposition of mining-affected communities, usually indigenous peoples, and civil society groups to industrial capitalist mining promoted by state authorities and the industry as a main source of national economic development (Tujan and Guzman 2002; Nem Singh and Camba 2016; Wurfel 2006; W. N. Holden 2005; W. N. Holden and Jacobson 2013; W. Holden, Nadeau, and Jacobson 2011; W. Holden and Ingelson 2007; Camba 2016). This set of literature shows that anti-mining groups contend that industrial mining results in huge local environmental and social ills, whose material and non-material costs outweigh the economic benefits for the country and its people. Further, the literature shows that these groups claim that the neoliberalisation of Philippine mining, corruption, and weak bureaucratic capacity, enables fraudulent practices that contribute to the negative environmental and social effects of the industry.

In terms of environmental costs, critics of mining support their claims by pointing to ecological tragedies, such as the infamous 1996 Marcopper Mining Disaster—

one of the case studies of my research—resulting from industrial mining operations, and point out the huge costs of rehabilitation (Tujan and Guzman 2002; Wurfel 2006; W. N. Holden 2005). This is exacerbated by the vulnerability of the country to natural hazards and the risk of burdening succeeding generations for the enduring ecological impacts of mining (W. N. Holden and Jacobson 2013; W. N. Holden 2005; W. Holden 2012).

In terms of social costs, anti-mining groups claim that neoliberal policies in mining that make mining frontiers more accessible enable coercive and violent practices that often dispossess mining-affected communities, especially indigenous peoples (Tujan and Guzman 2002; Nem Singh and Camba 2016; Wurfel 2006; W. N. Holden 2005; W. Holden and Ingelson 2007) through manipulated consent, physical displacement, destruction of sacred sites, environmental impacts, and militarisation (W. Holden, Nadeau, and Jacobson 2011). Further, neoliberal mining, according to some anti-mining groups, prioritises the profit-making interests of foreign-owned mining companies and mineral needs of other countries to the detriment of local miners and prolonging the availability of minerals for the needs of future generations of Filipinos (Nem Singh and Camba 2016; W. N. Holden 2005; Tujan and Guzman 2002). For these environment and social costs of industrial mining, anti-mining groups claim that the industry does not provide huge employment benefits and they question the state's capacity to generate revenue given the tax incentives provided by neoliberal policies (Tujan and Guzman 2002; W. N. Holden 2005; Wurfel 2006).

**6.1.2.** The two types of conflicts, intra-elite and elite versus non-elites, unfold with some preponderant political economy *development paradigms* for extractive-led development in colonised and developing countries. These paradigms take the form of *extractivism*, *resource nationalism*, and *neoliberalism*.

*Extractivism* refers to the extraction of raw materials in a massive scale primarily for export (Gudynas 2018). This development strategy incites both elite versus non-elite conflicts and intra-elite conflicts. The former involves colonised populations and colonial powers, and local communities from developing

countries against their states and foreign corporations. The latter involves corporations with developed states against developing states.

Extraction can be traced as far back as five centuries ago during the height of colonialism and imperialism and persists in contemporary development, albeit with some modifications (Acosta 2013). Scholarship on extractivism is often applied to developing countries in Latin American but can also describe natural resource development in developing countries in Africa and Asia. During the Euro-American colonial expansion, extractivism underpinned the drive of colonialists and merchants to exploit natural resources by making colonies specialise in supplying raw materials to meet the needs of the colonisers' home cities; in turn, colonisers imported these raw materials and manufactured them into profitable goods (Acosta 2013; Ochonu 2013). Extractivism at the time, among others, triggered elite versus non-elite conflicts, as suggested by scholarship documenting the resistance of colonised populations against the colonisers (McFarlane 1995). Even after the independence of these colonies, this exploitative relationship somehow continued as it aligned with the modernisation theory of development. The conflict evolved and included an intra-elite dimension, with corporations based in and supported by developed states (former coloniser) exploiting developing states (former colony).

After World War II, extractivism waned as a development strategy. However, with the primary commodity price hike in the first decade of the twenty-first century, developing states wanted to increase their resource revenues and offered generous access to natural resources to foreign players. This period was interpreted by some scholars as a reprise of extractivism in contemporary times, using the updated label neoextractivism (Acosta 2013), new extractivism (Veltmeyer and Petras 2014), or extractivist imperialism (Veltmeyer 2013), whereby natural resource development in developing countries is propelled by foreign direct investment and operated by foreign-based or -owned extractive industries supported by developed states. This also reprised the intra-elite competition with foreign extractive industries and developed states having more advantage over developing states. The conflict between elites and non-elites continued, as local communities, often indigenous peoples, resist the encroachment of their territories by foreign

corporations given access by developing states (Veltmeyer and Petras 2014; Gudynas 2018; Acosta 2013).

*Resource nationalism* has been used to interpret the development strategy of former colonies that intended to reap more benefits from resource extraction by nationalising extractive activities. This development strategy incites intra-elite conflicts between developing states and foreign corporations from developed states (often former colonisers). It also incites elite versus non-elite conflict, with local communities from developing countries going against their own states.

After the independence of former colonies starting from the late nineteenth century onwards, developing countries that export primary resource commodities at different periods embraced resource nationalism. They continued extractive industry-led development by taking greater control of natural resource development and limiting the operations of private foreign companies (Andreasson 2015; Thorp 1998). Resource nationalism waned with neoliberal reforms in the 1980s and 1990s. During the primary commodity price boom of the first decade of the twenty-first century, the development strategy of some developing countries was interpreted as resource nationalism, albeit in different degrees (Haslam and Heidrich 2016; Bremmer and Johnston 2009; Wilson 2015; Stevens 2008). This development strategy induced intra-elite conflicts as foreign companies were constrained in expanding operations in developing countries by developing states (Thorp 1998). Resource nationalism also continued to induce elite versus non-elite conflicts, as local communities from developing countries go against their own states who pursue extractive industry-led development.

*Neoliberalism* as a development strategy is a resurgence of nineteenth-century free market capitalism combined with a highly networked and globalised world. Neoliberalism incites intra-elite competition in natural resource development between foreign corporations and developing states. As developing states sought ways to increase their income, they (sometime reluctantly) turned to foreign corporations who had resources to expand their operations in natural resource development in developing countries (Thorp 1998). Neoliberalism also incited elite versus non-elite conflicts, as some operations by foreign companies have

been claimed by civil society groups as contributing to income inequality (ElGindi 2017) and negative environmental impacts (Nevins and Peluso 2008).

**6.2. Geopolitical approach** theorises the different functions of natural resources on security issues. It explains the role of natural resources in, say, colonial conquests or civil wars. Geopolitical analysis shows that natural resources function both as a *motivation* and an *enabler* in security issues as far back as the fifteenth century to present times.

Natural resources *motivated* colonial and imperialist powers to expand territories and *enabled* them to have material resources to compete with each other until the Cold War period. Scholarship on colonial rebellions also documents the function of natural resources as a motivation of conflicts between colonisers and the colonised (McFarlane 1995). When the Cold War ended, Western powers' security concerns over natural resources somewhat abated. However, within primary commodity exporting dependent countries in the developing world, resource-related conflicts like civil wars continued, if not heightened, in part due to economic strife and poor governance (Le Billon 2005). Once again during this period, natural resources functioned as *enabler* of these conflicts in terms of funding, and as a *motivation* for controlling the resources. In the first decade of the twenty-first century, for example, these two functions became clear with the natural resource commodity price hikes. Across time, governments from developing countries were *motivated* to control natural resources as a development strategy. Armed rebel groups were *motivated* to compete in this control to fund their rebellion (Le Billon 2012). In the 1990s, some examples are the National Union for the Total Independence of Angola led by Jason Savimbi and the Revolutionary United Front in Sierra Leone. On the one hand, the success of some exporting countries to obtain resource revenues *enabled* building up stronger military capacity and the ability to broker peace with armed groups; on the other hand, some resource revenues that ended up in the hands of some rebel groups *enabled* them to prolong the conflicts (Le Billon 2005).

Mapping on to the broad geopolitical literature, analyses of Philippine mining suggest similar explanations, that natural resource abundance functioned as a

*motivation* and an *enabler* in security issues. During the Philippine colonial period (1565-1941), some of the scholarship suggests the function of natural resources as *motivation* for colonial expansion from documentation of Spanish and American colonisers' explicit desire to exploit the archipelago's natural resources (Lopez 1992; Camba 2015). Arising from this, some literature also suggest that natural resources *motivated* the conflict between the colonisers and the colonised (Lopez 1992; Camba 2015; Habana 2001; Barclay 2003; Scott 1974). The literature explains the territorial conflicts as power struggles over mineral resources between colonisers and indigenous peoples in the historical period (1564-1941) leading to the early years of establishment of industrial mining (Lopez 1992; Camba 2015; Habana 2001; Barclay 2003; Scott 1974). Early Filipino miners from indigenous communities resisted Spanish colonial encroachment (1565-1898) to defend not just mineral lands but their ancestral territories and autonomy (Lopez 1992; Scott 1974). During the American colonial period (1898-1941), colonial miners successfully encroached these mineral-rich lands (Lopez 1992; Camba 2015; Barclay 2003) previously defended by early Filipino mining communities to the detriment of these communities' traditional systems (Habana 2001).

Today, natural resources functioned both as an *enabler* and as a *motivation* in armed conflict. Holden and Jacobson (2007) suggest that Philippine mining can *enable* armed rebellion, as a source of funding through extortion, and can be a *motivation* for some members of anti-mining communities to join the rebellion. Anti-mining sentiments develop when mining operations encroach the lands of surrounding communities, especially indigenous populations, that can affect their livelihoods, well-being, and cultural ways. Some of the literature suggest that anti-mining sentiments *motivate* attacks on large-scale mining operations that, in turn, *motivates* government authorities to militarise these host indigenous communities of mining operations (W. N. Holden and Jacobson 2007; W. Holden, Nadeau, and Jacobson 2011).

**6.3. An environmental discourse approach.** The political economy and geopolitical approaches have been major drivers in steering the scholarship on Philippine mining. They lend important insights in terms of the varying relationships of power as well as the factors that drive actors to behave a certain

way. But an environmental discourse approach can provide a clearer account of the environmental dimension of the conflicts they describe. An environmental discourse approach can interrogate the environmental knowledge issues beneath those interpretations.

In the political economy approach, the elite versus non-elite conflicts may highlight the opposition of civil society groups to the neoliberal mining-based development paradigm of the state that can benefit the growth of the industry, but this approach does not provide an account of underlying conflicts in environmental knowledge and its production. I contend that an environmental discourse approach can illuminate on these environmental knowledge issues in mining conflicts. Similar to the political economy literature on intra-elite competition, the state's development paradigm can be explained using the environmental discourse approach, particularly by Promethean environmentalism that sees nature as a resource at the service of the needs and interests of human society, such that environmental problems can be solved by human ingenuity (Dryzek 2013). Civil society opposition can be explained using green political discourse (Dryzek 2013) that rejects a purely instrumental view of nature but instead sees the close relations between nature and humans, and often promotes an inclusive or a participatory approach in environmental governance. **An environmental discourse approach can highlight the environmental dimensions of political economy interpretations of mineral resource conflicts.**

Meanwhile, geopolitical analysis has been influential in the scholarship on Philippine mining, but this approach fails to fully capture the environmental dimension of security conflicts, i.e. the environmental knowledges held by indigenous peoples, colonial or state authorities, or anti-mining communities who may have opposing assumptions about nature and natural relationships. A clash in environmental knowledge between indigenous peoples and colonisers or states is suggested by scholarship on indigenous identity politics that demonstrates a difference in worldview between indigenous peoples and Euro-American colonisers and their successor states in their quest for capitalist expansion (L. T. Smith 2012; K. E. I. Smith 2006; Niezen 2003; Cadena and Starn 2007; Rodil 1992; Schlegel 1994; Edgerton 2008; Finin 2005). These studies in one way or

another present this difference in philosophical, not universal terms. There are similarities in the worldviews of different indigenous peoples but there is not one universal indigenous worldview. Following this literature's idea of a difference in worldview for this study and using the lens of environmental discourses, I examine the collision of underlying environmental knowledges behind the motivation of colonisers to access mineral resources and of indigenous peoples to defend mineral resources.

**6.4. Why use an environmental discourse approach instead of other discourse approaches?** There are at least 57 varieties of discourse analysis (Gill 2000) and it would not be possible to justify my use of environmental discourse over all other varieties. But I will explain my choice vis-a-vis development discourse because the title of the thesis itself includes the term 'development' and a reader might indeed ask why I did not use development discourse instead. Because of my concern on the environmental knowledge underpinning conflicts surrounding mining disasters, I considered environmental discourses to be more appropriate than development discourses in explaining my empirical findings on environmental issues. Development discourses focus on political economy themes that is not the primary concern of the thesis. Escobar (1995) explained that the history of the development discourse is rooted in addressing poverty. Therefore, in Moore's (1995) review of development discourse scholarship, it is not surprising that the common development discourse themes he outlined were mostly political or economic—state-mediated capitalism, neoliberalism, equity, democracy, and sustainability. Among these major themes, only sustainability has a clear environmental aspect, and so development discourses would not be sufficient to explain the range of environmental themes in my empirical findings.

## **7. Literature review: Industrial disasters and ecological reflexivity**

There is limited scholarship on responses to industrial disasters and the few existing studies have human welfare considerations and some limited environmental considerations. The works of Curran (1993) and Lindon, Canare, and Mendoza (2014) seek to address social inequality in the aftermath of an industrial disaster. Curran (1993) interpreted legislative reforms in occupational health and safety after the 1984 Wilburg coal mine disaster in the

United States. Using class analysis, Curran (1993) found that legislative reforms were used to assuage workers' demands, instead of addressing deeper causes of the disaster such as the structural inequality in labour and production in the coal mining industry. In the Philippines, Lindon, Canare, and Mendoza (2014) analysed the 1996 Marcopper mining disaster using a causality chain framework premised on mining's potential to contribute to inclusive growth. The disaster demonstrates that a disruption in the chain can thwart mining's potential contribution to inclusive growth (Lindon, Canare, and Mendoza 2014). These studies are valuable in explaining the events surrounding the disasters and in promoting more equitable distribution of benefits from resource extraction. However, such studies lack serious consideration of the environment.

There are some studies that look at responses to industrial disaster underpinned by prescriptions with limited environmental considerations. In the aftermath of the 2015 mining disaster in Brazil, Garcia et al. (2017) estimated that the worth of the environmental damages is at least six times higher than the penalties paid by Samarco Corporation who owned the mine tailings dam that collapsed. In order to avoid such gap between fines and environmental damages, they advocated for an environmental bond policy that adequately considers risks and the worth of environmental services, that can ensure resources for environmental rehabilitation (Garcia et al. 2017). In the Philippines, Bravante and Holden (2009) critically analysed environmental impact assessment (EIA) policy and practice in mining. Their findings show that EIA in mining is perfunctory and subordinated to the state's mining-based development paradigm. They proposed a "more meaningful EIA system" or more inclusive form of development (Bravante and Holden 2009, 543). While a meaningful EIA system for Bravante and Holden (2009) includes biodiversity considerations, their proposal focuses more on human development and does not seriously challenge the industrial roots of mining disasters.

These works reviewed on responses to industrial disasters lack prescriptive foundations that are environmentally transformative, a perspective needed that can provide pathways for veering away from industrial society's values that lead to industrial disasters. To fill this normative position in studying industrial disasters, I analysed responses to shocks to Philippine mining disasters using ecological reflexivity. Developed by Dryzek and Pickering (2019) as a primary virtue for institutions in the Anthropocene, ecological reflexivity can disrupt the pathological path dependencies inscribed in industrialism in order to avert

ecological disasters. Ecological reflexivity is the capacity of a system or institution to adequately recognise, rethink, and respond to signals that indicate environmental signals in the Anthropocene epoch. Dryzek and Pickering (2019) identified non-human nature as an important actor in exercising formative agency in the Anthropocene. This study can help identify ways in which non-human nature can be an actor in this exercise of formative agency in the context of responding through discourses to shocks due to mining disasters.

## **8. Scope and Limitations**

In this section, I set out the scope and limitations of this study to clarify what readers can expect in this study in terms of theoretical and empirical discussion.

This study focuses on environmental knowledge in resource conflicts surrounding mining disasters. This focus justifies the use of an environmental discourse taxonomy, in this case Dryzek's (2013), to analyse the deep history of the development of Philippine mining and the responses to mining disaster shocks. Other taxonomies like development discourses will be insufficient tools of analysis to discuss the environmental knowledge in Philippine mining conflicts and disasters.

I also acknowledge the agency of actors in discourse formation. This position is consistent with Dryzek's discourse approach and precludes the appropriateness of other discourse approaches, e.g. Foucauldian governmentality, that can downplay the agency of actors in discourse formation.

The study's contribution to the environmental discourse taxonomy, namely, the indigenous sustainability discourse and the non-industrial cornucopian discourse are limited to the early history of Philippine mining. These proposed discourses have manifestations in the subsequent historical periods but are no longer discussed because of empirical reasons. For the indigenous sustainability discourse, this discourse is tied to the practices and cultures of indigenous peoples in the Philippines. In this study, the indigenous sustainability discourse is prominent in the colonial period of Philippine mining because of the central role of indigenous peoples and their societies in the development of the mining industry. However, in subsequent chapters involving the mining disasters in Marinduque island, the indigenous sustainability discourse is not discussed because the locals of Marinduque neither identify

themselves as indigenous peoples nor are they recognised as indigenous peoples by outsiders including the Philippine state. Also, the non-industrial cornucopian discourse is not discussed beyond the early history of Philippine mining because the empirical focus on mining disasters involves copper mining, an operation that is only possible with industrial requirements.

The study's aim is to fill a gap in scholarship on resource conflicts surrounding mining disasters by highlighting the environmental dimension. There are other dimensions to this issue that can be interpreted using other theoretical perspectives and approaches, but these are beyond the scope of this research.

## 9. Overview of the chapters

At the outset of this chapter, I presented the three research questions of the study.

- **Conceptual / empirical question:** What is an appropriate taxonomy of environmental discourses in non-industrial settings, and what configuration do we find?
- **Explanatory question:** How can we explain the conflicts in Philippine mining, especially in the aftermath of mining disasters, in terms of the evolution of the configuration of environmental discourses?
- **Normative question:** If effective response to disaster can be captured in terms of ecological reflexivity, to what extent does the configuration of environmental discourses promote or hinder ecological reflexivity?

These research questions will be answered over the next ten chapters. I begin with **Chapter 2**, which presents the conceptual framework and methodology of my study. I discuss Dryzek's taxonomy in greater conceptual depth and explain how I used this taxonomy in my subsequent analyses of mining discourses.

The empirical chapters begin in **Chapter 3** where I narrate the birthing of Philippine industrial mining. **I argue that the dominance of the Promethean discourse accompanied the full development of industrial mining.** The Promethean discourse impeded any response to recognise social and economic impacts, despite the recognition of social and ecological impacts at the local level. The Promethean discourse, that is committed to capital-intensive and mechanical technologies, was essential in the birthing of industrial mining in the

Philippines during the American colonial period. In Benguet, the centre of Philippine colonial industrial mining, the dominance of the Promethean discourse meant the transformation of Igorot society and their environment, and the subjugation of their subscription to the indigenous sustainability discourse. Before the Americans, the Spanish colonisers also aimed to exploit the archipelago's mineral resources at a massive scale by subscribing to the nonindustrial cornucopian discourse that has no commitment to capital-intensive and mechanical technologies. The Spanish failed to undertake massive extraction as they struggled to subjugate the Igorot miners and their subscription to indigenous sustainability. After the war, the newly-independent Philippine continued the colonial subscription to the Promethean discourse, particularly in the industrialisation of copper mining in the 1950s and 1960s.

In **Chapter 4**, I present the permeation of environmental concerns in Philippine policies. The domination of the Promethean discourse was somewhat challenged when the authoritarian government of Ferdinand Marcos adopted the language of the limits discourse in national policies after the signing of the Stockholm Declaration of the United National Conference on Human Environment in 1972. In the early 1970s, elements of the limits discourse appeared in environmental policy statements. But the limits discourse did not have any implementing rules nor programs. Proponents of the limits discourse believe that resources are finite and so sees the need for seriously halting the insatiable desire for economic growth through excessive production and consumption. The limits discourse counter the economic growth commitments of the Promethean discourse. At the same time, a new mining law was enacted in 1974 to strengthen the modernisation of Philippine industrial mining, further demonstrating the subscription to the Promethean discourse. The political economic realities during the Marcos regime can provide new insights in the analysis of the Promethean discourse and administrative rationalism in Philippine policies. Administrative rationalism bestows decision-making powers in administrators who deploy expert knowledge. **I argue that the Promethean discourse was consistent with state intervention and crony capitalism that corrupted administrative rationalism.**

In **Chapter 5**, I present the slow-onset mining disaster in Calancan Bay from 1975 to 1991 due to Marcopper Mining Corporation's (MMC) operations. **I argue that, alongside state intervention, crony capitalism, and a weak bureaucracy, the Promethean discourse undermined both green politics and administrative rationalism.** Promethean thinking was

consistent with state intervention and crony capitalism during the Marcos regime (Kang 2002; Manapat 1991) The local environmental movement, that embodied green politics, responded throughout the slow-onset features of the disaster through mobilisation, even though the impacts were not immediately remarkable. The actions of the movement were helpful in setting conditions for ecological reflexivity. The movement urged government to take action. However, government response was delayed while the Promethean discourse dismissed the movement's early claims on environmental degradation. The disaster amplified mining-affected residents' sensitivity to environmental problems based on local knowledge.

In **Chapter 6**, I present the mining disaster in Marinduque's Mogpog town in 1993 when heavy rains from a typhoon led to the failure of Marcopper's earthen dam dumped with mine waste rock. **I argue that Promethean conditioning undermined green politics, leading to the sudden onset mining disaster that failed to generate adequate response from the national government and Marcopper.** This argument adds an environmental dimension to the Philippine political economy and social movement perspectives on conflicts surrounding the 1993 mining disaster. The Promethean discourse dismisses resource scarcity and environmental constraints, stresses the role of capital-intensive technology; and assumes hierarchical relationships, i.e. the domination of nature by humans. Consistent with Promethean discourse, Marcopper did not seriously consider the residents' local environmental knowledge that motivated them to oppose the plan to build the dam. Green political discourse recognises complex ecosystems and human damage to them. The local environmental movement that followed a discourse of green politics mobilised to oppose the planned dam, and later demanded reparation from Marcopper after the disaster. The **sudden onset** mining disaster allowed immediate recognition of environmental problems by local residents and local politicians. But the dramatic impacts of the mining disaster failed to capture the attention of national government. The disaster's dramatic features were diminished by the broader impacts of the typhoon and Marcopper's strategic use of the typhoon as the cause of the tailings failure.

In **Chapter 7**, I present the adoption of the sustainable development discourse in Philippine policies that was part of an international trend since the 1980s. In this chapter, **I argue that the Promethean discourse, consistent with some neoliberal features, overrides sustainable development in mining policy statements.** This argument highlights the environmental dimension of the political economy analysis of the tension between sustainable

development and neoliberalism in Philippine mining. The state's apparent commitment to sustainable development proved superficial. An analysis of mining policy statements would indicate the high priority given to economic development over environmental protection and social welfare. Sustainable development appears in the objectives of the first implementing rules. However, the policy is largely configured around mining-based national development, which indicates the domination of the Promethean discourse with its commitments to economic growth and the recognition that resource scarcity and environmental problems can be overcome using modern technology.

In **Chapter 8**, I present the spectacular mining disaster in Marinduque's Boac town in 1996. In this chapter, **I argue that, alongside oligarchic patrimonialism that corrupts the bureaucracy, the Promethean conditioning of Marcopper led to the spectacular mining disaster and green politics was helpful in setting conditions for ecological reflexivity.**

Conditioned by the Promethean discourse, Marcopper manifested a strong faith in engineering technology. The company converted the Tapian mine pit into a tailings reservoir by sealing its tunnel with a cement plug, which is an unconventional engineering design. The spectacular physical characteristics of the disaster generated immediate response from the different actors, including government and industry. But the responses of Marcopper and PDI, and some government regulators did not seem earnest. Following green politics, the local environmental movement countered the actions of the company and some regulators by pushing for the use of independent experts in EIA. The actions of the movement helped to set conditions for ecological reflexivity. The aftermath of the spectacular mining disaster resulted in positive developments for Philippine mineral resource governance. But these positive gains are restricted in terms of meaningful changes in mining.

In **Chapter 9**, the concluding chapter, **I argue that the Promethean conditioning of policies and institutions led to mining disasters; consistent with green politics, the local environmental movement anticipated these disasters and mobilised in their aftermath, helping set conditions for ecological reflexivity. However, an institutional response that varied from resistant to weak and inconsistent severely constrained reflexivity.**

## Chapter 2

### Conceptual Framework and Methodology

Environmental discourse analysis provides the glue that brings together the conceptual/empirical, explanatory and normative questions that drive this research project. In this chapter, I explain what I mean by environmental discourse analysis, and justify why Dryzek's approach is used in this research. I provide a critical overview of Dryzek's taxonomy, which is the basis of my strategy for empirical research. I justify my selection of cases, the data gathering and analysis techniques I used and the research ethics and practical considerations that governed my research project. I conclude the chapter by explaining the role of normative theory in my empirical research.

#### 1. Conceptual Framework: Environmental Discourse Analysis

My main reason for using environmental discourse analysis is to highlight environmental knowledge issues that are often overlooked in political economy and geopolitical interpretations of the conflicts. I found the use of environmental discourse useful for empirical analysis because environmental knowledge is exchanged through discourses (M. Hajer and Versteeg 2005) and discourse can manifest power through knowledge transformation (Foucault 1980), say when an environmental discourse approach deals with issues of new forms of knowledges with 'ecospeak' (Darier 1999) or when an environmental discourse approach shows how international policy regimes localise power and knowledge (Litfin 1995). Environmental discourses also link to normative reasoning. Discourses reflect not just knowledge but also values (Butteriss, Wolfenden, and Goodridge 2001). By examining the role of discourses in promoting or constraining ecological reflexivity, I make a normative contribution beyond the conservative or reformist commitments of previous normative studies in Philippine industrial mining.

There are, of course, many versions of discourse analysis (Gill 2000) and as I explained in the previous chapter, my primary reason for using an environmental discourse approach over others (such as the development discourse approach) is my focus on environmental knowledge in mineral resource conflicts. Of course, the environmental discourse approach has been applied by a range of scholars to a range of issues (Leipold et al. 2019) and one may ask

why I focused on using Dryzek’s approach instead of the other mainstream environmental discourse approaches. I particularly selected Dryzek’s approach because unlike the “three giants of environmental discourse analysis” (Dryzek 2013, 11)—referring to Hajer (2003), Litfin (1995), and Epstein (2008)—who provided a rich level of detail in their studies, Dryzek’s approach prioritises the big picture of details of the study. This approach is more fitting for my research question, considering I want to map the long historical trends as well as the durable and emerging conflicts over environmental knowledge in Philippine mining. Where appropriate, I did a deep dive in primary and secondary data to make sense of key decisions that shape the course of environmental discourse formation and contestation, and for the most part, I map the factors that define knowledge production. To be clear, I used Dryzek’s taxonomy as a guide that was revised based on empirical findings in local settings, and not as a rigid framework that needed to be followed strictly. I explain this further in section 5 below on data analysis.

Conceptually, my research started with Dryzek’s classification of main environmental discourses. I present each of these categories below, structured based on Dryzek’s coding scheme using the following elements (also see Stevenson and Dryzek 2012):

- Basic entities whose existence is recognised or constructed. Dryzek refers to this as the ‘ontology of a discourse.’ Some recognise the existence of ecosystems, while others see nature as nothing more than brute matter, while others do not recognise natural systems at all.
- Assumptions about natural relationships. Competition, hierarchy, cooperation or conflict are some examples.
- Agents and their motives. Agents can be individuals or groups who create storylines that make discourses coherent. They could have a range of motivations such as material incentives, survival, or principle. It is also possible that the nature takes the role of an agent, as in the case of an unforgiving entity
- Key metaphors and other rhetorical devices. These provide the persuasive power to discourses by appealing to shared practices, emotions, or identity claims.

I used these categories to orient myself with possible discourses taking place in Philippine mining, although I considered these categories as provisional and subject to modification

depending on my data analysis. Doing an empirical study of a developing country context with limited industrial development, I identified other related categories whenever appropriate.

## 1.1. Dryzek's environmental discourses

### 1.1.1. Promethean discourse

According to Dryzek (2013), the Promethean discourse is an early version of Promethean environmentalism (to be discussed later as a separate discourse). The Promethean discourse enabled the establishment of industrialisation. Dryzek considered the cornucopian discourse to be the same as the Promethean discourse and simply used the latter term to refer to both discourses.

The Promethean discourse denies the limits of nature, that whenever needed, resources will be found whenever sought. It *recognises or constructs* nature as “brute matter” (Dryzek 2013, 59–60) to form and transform nature and to effectively use mechanised technology to address resource scarcity. The discourse can *recognise* markets (Dryzek 2013) that makes the discourse compatible with industrial society’s capitalist structures. Another version that *recognises* the state can make the discourse compatible with state monopoly capitalism or nationalist development policies, which is the case in the Philippines. The discourse also *recognises* prices, technology, people, and energy.

The *natural relationships assumed* in the Promethean discourse are hierarchical and competitive (Dryzek 2013). The hierarchy involves humans dominating not just nature but everything else. Humans also compete with each other for resources and can use technological innovations to address issues of scarcity.

The primary *agents* in Promethean environmentalism can be everyone, acting as economic agents, *motivated* by their material self-interest (Dryzek 2013). Prometheans view populations positively because of the human mind’s capacity to innovate to enable perpetual economic growth even amid scarcity.

A *key metaphor* in Promethean environmentalism is “machines” (Dryzek 2013). The machine metaphor portrays scarcity to be a simple problem that calls for simple solutions that human capacity and human will can create.

### 1.1.2. Limits discourse

A serious challenge to industrialism’s political economy status quo was the limits discourse, that *recognises or constructs* notions of finite stock of resources, the carrying capacity of ecosystems, population, and elites (Dryzek 2013). The discourse emphasises that humans rely on non-renewable resources. Ecosystems are primarily recognised as sources of renewable resources and for their capacity to absorb waste and pollution. The discourse constructs humans not simply as people but as populations, whose increasing number has effects on ecosystems. Elites, especially those associated with governments and scientific ecological knowledge, have prominent roles in this discourse.

The *natural relationships assumed* in the limits discourse are primarily conflict and hierarchy (Dryzek 2013). Conflicts can manifest in various kinds of competition over resources. Hierarchy is justified based on expert knowledge or values.

Given the justification for hierarchy based on expertise and values, elites with capacity in to rule societies or produce expert knowledge have primary **agency** in the doomsday scenario of the limits discourse. The *motivation* of elites is “up for grabs” (Dryzek 2013, 42). Elites may perpetuate the quest for continued economic growth moderated by social welfare policies or considerations. They can also curb increasing economic growth based on scientific knowledge predicting that this will result in irreversible destruction and a doomed future for humanity, and instead opt for conservative economic conditions within acceptable boundaries. But the bottom line is that elites are seen as quite capable of governing humans who can be examined as populations and regulated with policies.

The limits discourse is replete with *metaphors*. Broadly, these can be categorised into “exponential growth” and “overshoot and collapse” (Dryzek 2013, 42).

Metaphors belonging to the former convey images broadly portraying a scenario of overpopulation with an implied or an explicit consequence of a crash. The latter is more explicit about the consequence, i.e. overpopulation is followed by the breakdown of ecosystems.

### **1.1.3. Administrative rationalism discourse**

Now we turn to a problem-solving discourse, administrative rationalism, one of responses to the limits discourse. Administrative rationalism take the form of a range of institutions and practices: professional resource management bureaucracies, pollution control agencies, regulatory policy instruments, environmental impact assessment, expert advisory commissions, planning, and rationalistic policy analysis techniques (Dryzek 2013).

It *recognises or constructs* liberal capitalism, the administrative state, experts, and managers or bureaucrats (Dryzek 2013). As a problem-solving discourse, administrative rationalism is reformist and can be compatible with a liberal capitalist structure without necessarily being solely committed to it. This means that so long as it can perform its problem-solving role, administrative rationalism can be compatible with the political economy status quo. The discourse looks solely to a homogeneous administrative or bureaucratic state as the governing authority. Bureaucrats or managers organises the knowledge of experts in pursuit of public interest.

The *natural relationships assumed* in administrative rationalism are hierarchical. One is the subordination of nature to human problem solving, though not in a highly domination fashion like that of Prometheans (Dryzek 2013). Another one is the subordination of people to states, and within states, other actors are subordinated to bureaucrats and experts (Dryzek 2013).

The primary *agent* in a collective sense is the state. But the hierarchical relationship within the state gives more agency to some individuals, i.e. bureaucrats and experts (foremost are engineers and scientists), who are *motivated*

by public welfare, narrowly defined and achieved by technical experts and their procedures (Dryzek 2013).

Administrative rationalism uses *metaphors and rhetorical devices* that are not very evocative, such as “a mixture of concern and reassurance” and “the administrative mind” (Dryzek 2013). The discourse expresses concern as it acknowledges environmental problems but reassures that the scenario is not alarming way that would call for a transformation of industrial society’s political economy structure. Perhaps the defining metaphor of the discourse is the administrative mind that is capable of controlling the state, in the same way that the human mind is capable of controlling the body (Dryzek 2013). This metaphor is complemented by a reassurance that society can be managed and that finding the right solutions for environmental problems are at hand.

#### **1.1.4. Sustainable development discourse**

Sustainable development *recognises or constructs* nested or networked social and ecological systems, capitalist economy, and ambiguity regarding the existence of limits (Dryzek 2013). In pursuit of sustainability, the discourse emphasises nested systems, both social and biological, at global, regional, and local levels (Dryzek 2013). Whereas the discourse can have a global outlook, its approach in addressing environment affairs is segmented. There is circumspect use and development of specific resources and ecosystems depending on the environmental effects desired (Dryzek 2013). Sustainable development can be compatible with the capitalist economy, as a structural status quo, without being solely committed to it. For political structures, however, the discourse requires some reforms particularly in the shift of power from nation-states to transnational and more local levels, and in strengthening networked governance across levels (Dryzek 2013). The discourse, on the whole, does not have a clear position on ecological limits.

The *natural relationships assumed* or idealised are positive-sum, cooperation, and subordination of nature (Dryzek 2013). The discourse believes that economic growth, environmental protection, distributive justice, and sustainability go

together. Sustainable development promotes cooperation and the consideration of various interests including environmental concerns (Dryzek 2013). Hierarchy is not altogether discarded; it is present especially in the subordination of nature to human needs and welfare.

The key *agents* in sustainable development are different actors from various sectors and scales (Dryzek 2013). This is consistent with nested social and ecological systems and cooperative natural relationships. Nation-states, intergovernmental organisations, business, NGOs, citizens, indigenous peoples, local communities, among others, *motivated* by the public good (Dryzek 2013), can have significant roles in attaining sustainable development.

The discourse uses *metaphors* like “organic growth” and “nature as natural capital” and *rhetorical devices* like “connection to progress” and “reassurance” (Dryzek 2013). For sustainable development, society and its members can continually grow and develop, with a circumspect political economy system effectively engages with the environment treated as natural capital. The discourse respects nature insofar as its resources are useful and essential to human development. Sustainable development pursues the same social progress agenda as other dominant political economy ideologies, but with strong environmental commitment. It also promotes a reassuring outlook, consistent with positive-sum that makes it possible to attain material, social, and environmental goods simultaneously.

### **1.1.5. Green political discourse**

Green politics, a sub-classification of green radicalism, has a strong political emphasis and can have the following varieties: green parties, social ecology, transition towns and new materialism, eco-Marxism, environmental movements and related groups, and radical summits (Dryzek 2013).

It *recognises or constructs* global limits, nature as complex ecosystems, humans with broad capacities, and social, economic, and political systems (Dryzek 2013). Notions of finite resources and the carrying capacity of ecosystems are

acknowledged, though there are differences in the strength of acknowledgement across the varieties of the discourse. Nature is perceived to have complex ecosystems that can be maintained by changing the behaviour of humans who possess far-reaching outlooks (Dryzek 2013). Green politics favours a structural approach whereby the important role of social, economic, and political systems is recognised.

The *natural relationships assumed* in green politics are equality among people and complex interconnections between humans and nature (Dryzek 2013). On the whole, the discourse aligns with egalitarian or participatory structures that can allow forms of inclusion in addressing environmental affairs. The discourse also assumes a complex interconnection between humans and nature, with humans highly likely to take on a stewardship role.

The key *agents* in green politics are a variety of individual and collective actors who can have multidimensional *motivations* (Dryzek 2013). Actors can be individuals and civil society groups, social movements, political parties, states, NGOs, and international organisations. Given its structural approach, collective actors are more important than individual actors in green politics (Dryzek 2013). In general, nature is conceived with hardly any agency.

In green politics, key *metaphors* are “organic” and *rhetorical devices* used are “appeals to social learning” and “link to progress” (Dryzek 2013). The discourse has a holistic worldview whereby different systems are intricately connected to each other, and human systems can continually develop capacities as they interact with natural systems. This development of human capacity is linked to social progress without the inane ideals of industrialism.

## **1.2. Contributions to environmental discourse taxonomy**

After giving an overview of the elements of environmental discourses developed by Dryzek (2013), I now turn to describing my contribution to environmental discourse taxonomy.

### **1.2.1. Indigenous sustainability discourse**

As Dryzek (2013) pointed out, the sustainable development discourse may be traced back to the resource restoration practices of indigenous peoples. From this starting point, I outline the elements of the indigenous sustainability discourse. I use the term indigenous but there are other terms that are preferred by some groups, terms such as Aboriginal and Torres Strait Islander in Australia, First Nations in Canada, and Native Hawaiian in the United States.

I based the elements of this discourse from three sources. First, I drew from my empirical discussion of early mining practices and traditions of early Filipinos, who self-identify as indigenous peoples today, during the Spanish and American colonial periods that I discuss extensively in the next chapter. Second, I drew from some of the scholarship on the indigenous cosmology, ontology, and epistemology of the Igorot (Adonis 2011) and Subanen (Quilo et al. 2015) in the Philippines, Aboriginal Australians (Cunningham and Stanley 2003; Foley 2006) like the Quandamooka people in Australia (K. Martin and Mirraboopa 2003), the Native Hawaiians (Meyer 2001) and Cherokee (Walker 2001) in the United States, First Nations (Cunningham and Stanley 2003) like the Cree (Ermine 2000) in Canada, the Sámi in Sweden (Borchert 2001), indigenous peoples in Africa (Wane 2008), the Purhépecha (Barrera-Bassols and Zinck 2003) in Mexico, and the Maori (Cunningham and Stanley 2003; L. T. Smith 2012) in New Zealand. Finally, I also drew from related scholarship on traditional ecological knowledge (Berkes 2008; Houde 2007), considered to be a subset of indigenous knowledge (Ibanez 2014). I also used my background knowledge on indigenous worldviews based on previous research on the rights, ethics, and social movements of indigenous peoples.

These bases are sufficient to draw basic elements of the discourse, but I do not claim that the elements are exhaustive nor exactly applicable to all cases of groups that identify as indigenous. Also, whereas some elements of the discourse may refer to a traditional past, I do not subscribe to essentialising indigenous peoples, their identities and practices, to a distant past, but acknowledge that the discourse does not only belong to history but continue to thrive and evolve among

indigenous peoples today. Instead of static and primitive, Foley characterised indigenous knowledge as “continuous, evolving and adapting to change” (2006, 27). As Wane argued, “indigenous knowledge is a living experience that is informed by ancestral voices” (2008, 183). Similarly, Cunningham and Stanley argued that indigenous “diversity, and distance (both geographic and genealogical), do not lessen the attachment of indigenous peoples to their lands and their worldviews” (2003, 403). The discourse is also relevant to contemporary indigenous movements. As Corntassel (2008) argued, sustainability is a cornerstone of contemporary indigenous self-determination and future mobilisation. He cited some examples of contemporary efforts by indigenous groups in Latin America to promote community-based livelihoods to secure their economic and food security (Corntassel 2008, 120).

Indigenous sustainability *recognises or constructs* local nature, holism, subsistence economy, and future generations. The discourse constructs nature in local terms, building on the everyday, relational experience of indigenous peoples to their surroundings (Houde 2007; Berkes 2008). The use of physical senses in observing surroundings is crucial in the Native Hawaiian experience (Meyer 2001). Indigenous identity and self-determination are bound up with belonging to this local place and accessing its natural resources (Corntassel 2008; Adonis 2011).

The discourse has a holistic understanding that all systems (human, natural, and spiritual, among others) are interconnected and interdependent (Corntassel 2008; Berkes 2008; Houde 2007). Meyer called this “embodied knowledge...that is not divorced from awareness, from body, from spirit, from place” (2001, 144). Martin and Mirraoopa (2003) argued that knowing, being, and doing are interconnected in indigenous thinking. Walker (2001) said that this holism is expressed in cultural symbols. Holism implies that there is not only thorough knowledge of local nature but also a holistic, relational sense beyond the local surroundings.

Subsistence economy has been a feature of indigenous societies (Kuokkanen 2011). Traditionally, indigenous sustainability’s production of goods and extraction of resources is small, based on needs and not for profit- or rent-seeking

common in industrial, capitalist societies. In pre-industrial indigenous societies, goods were exchanged with other groups who can provide items that cannot be sourced locally, contributing to that sense of connection and dependence beyond the local area. When the reach of capitalism and the cash economy extended to these indigenous societies, the subsistence economy diminished but can still manifest with values that favour the public good, whether for nature or society, instead of profit-making.

The discourse has a strong sense of inter-generational accountability, including to that of future generations. Ancestors are revered and their legacies upheld (Adonis 2011; Ibanez 2014); there is also a duty to pass on these legacies, including ancestral territories and knowledge, to succeeding generations (Corntassel 2008).

The dominant *natural relationship assumed* is communitarian, in the sense of a community with members or systems are highly connected and reinforcing each other. Whether indigenous systems may be interpreted as hierarchical or egalitarian, there is a strong sense of reciprocal responsibility for the well-being of others (Meyer 2001; Adonis 2011), including nature (Corntassel 2008). Among Aboriginal Australians, the notion of “country,” a holistic conception of place, is a “truly relational ontology” (K. Martin and Mirraboopu 2003, 207). As nature provides for peoples’ different needs, such as physical and spiritual, indigenous societies act as custodians of nature, which can explain the traditional practice of replenishing natural stocks, as Dryzek (2013) noted.

The primary *agent* in this discourse is the community (including nature) whose members, regardless of role, are *motivated* by the pursuit of public interest, specifically for the local community and broadly for indigenous interests. Among the Maori, the the extended family or community called “whanau,” is the foundation social unit and not the individual (L. T. Smith 2012). Nature’s agency is recognised in this discourse. It is treated as physical and spiritual, or can be associated with spiritual beings (Adonis 2011). Often through folk narratives, indigenous societies manifest beliefs that nature and its associated spiritual beings can continually provide for the community’s needs and in like manner deprive those needs (Adonis 2011). This should not be understood in a fatalistic sense, but

rather in terms of binding humans to act in the best interests of nature and society (Quilo et al. 2015).

A key *metaphor* in this discourse is ‘land is life’ and the *rhetorical device* of passing on traditions and territories. The ‘land is life’ metaphor has been used by the indigenous peoples’ movement since at least the 1980s. The metaphor embodies indigenous societies’ holistic understanding of all systems, respectful and circumspect use of resources, replenishing of natural stocks, and belief in nature’s agency. Land can be personified, e.g. “moves and behaves” (Barrera-Bassols and Zinck 2003, 229), and revered as the source of life, e.g. referred to as “mother of all living beings” (Barrera-Bassols and Zinck 2003, 229). On the concept of land in Aboriginal philosophy, Foley explained that “we do not own the land, the land owns us. The land is our food, our culture, our spirit and our identity” (2003, 46). The *rhetoric* of passing on traditions and ancestral territories to the next generation reinforces the communitarian natural relationship. Important features of indigenous knowledge, embedded in the discourse, is that it develops over an extended period of time and handed down to next generations (Foley 2006).

### **1.2.2. Non-industrial cornucopian discourse**

The non-industrial cornucopian discourse is an early version of the Promethean and Promethean environmentalist discourses. Because of this, the discussion below of the elements of non-industrial cornucopia will also cover its similarities and differences with the other two discourses.

Similar to the Promethean discourse, non-industrial cornucopia *recognises or constructs* nature as “brute matter.” But unlike the other two discourses, non-industrial cornucopians believe that nature can be formed and transformed without the aid of modern technology. Non-industrial cornucopians are deeply committed to the theory of abundance and categorically deny environmental limits that make it possible for humans to achieve perpetual material prosperity, even without modern technology. To amass considerable wealth, non-industrial cornucopia

requires huge and cheap labour supply that makes it compatible with feudal society and colonialism, that can include exploitative practices like forced labour.

The *natural relationships assumed* in non-industrial cornucopia are hierarchical and competitive. Hierarchy involves humans dominating not just nature but everything else, like in Promethean and Promethean environmentalist discourses. However, because non-industrial cornucopia does not use modern technology, a difference with the other two discourses is that humans not only compete with each other for resources, but also dominate other humans often as cheap labour for increased production and extraction.

Similar to Promethean and Promethean environmentalist discourses, the primary *agents* in non-industrial cornucopia can be all humans, acting as economic agents, who are *motivated* by their material self-interest. However, unlike in the two discourses, the hierarchical relationship among humans in non-industrial cornucopia gives more agency to the powerful or influential in society. These can be monarchs, landlords, merchants, colonisers, and other economic or political elites.

The key *rhetorical devices* in non-industrial cornucopia are expressions of the theory of abundance. This theory is also part of Promethean and Promethean environmentalist discourses, but non-industrial cornucopians have a deeper commitment to the theory. It is often expressed in vivid descriptions of natural resources and territories, like teeming forests, pristine wilderness, and untouched nature, that suggest abundance and availability for economic exploitation. This is often accompanied by the territorialisation of lands and natural resources for political and economic use, say by monarchs or colonisers. Although these lands and natural resources may already be used by local populations (like indigenous peoples), the desire to accumulate more wealth requires this territorialisation to access resources from abundant nature. In Australia, colonisers achieved this by declaring lands as *terra nullius* ('no one's land') despite the long history of Aboriginal and Torres Strait Islanders' relationship with these lands. In the Philippine colony of the Spanish empire, the Regalian Doctrine declared that only the Spanish Crown can bestow private titles and that all other lands and territories

belong to the public domain and under the control of the state, despite some of these lands traditionally owned, inhabited, and used by early Filipinos.

### **1.3. Normative theory in empirical research**

Although mining disasters and their consequences are real and can have obvious manifestations, humans can know and represent these phenomena differently. Though “more often, it is hard to prove constructions right or wrong in any straightforward way” but “it is still possible to engage in critical comparative judgment, to apply evidence and argument, and to hope that in so doing we can correct some errors, and so move toward a better overall understanding of environmental issues and problems” (Dryzek 2013, 13). One way to move forward in critically engaging with the different interpretations of mining disasters is by looking at responses of different actors to shocks generated by disasters. Responses are conditioned by the configuration of discourses and effective response can now be captured by the idea of ecological reflexivity,

Dryzek (2016) contends that ecological reflexivity is the first virtue of governance in the Anthropocene. Ecological reflexivity, a self-critical capacity, is especially suited to see through interpretations of environmental affairs that perpetuate pathologically path dependent institutions and practices that contribute greatly to the environmental crises in the Anthropocene epoch. Dryzek’s definition can be encapsulated into the three components of ecological reflexivity identified by Pickering (2018): recognition, rethinking, response. In another work, Dryzek and Pickering (2019) used the term reflection instead of rethinking.

In this thesis, ecological reflexivity will be used as a guide and not as a strict normative standard. I have two reasons for this. First, doing so allows my research to focus on providing organised descriptions of conflicts in discourse while constantly reflecting on how these conflicts can be made more responsive to the demands of ecological democracy. Second, a strict application of ecological reflexivity is a high bar for a business activity that is not expected to behave in environmentally-friendly manner. Rather, while my focus is on identifying the configuration of discourses and responses to shocks, whenever possible, I reflect on the adequacy of these responses in terms of

pathways in setting conditions for ecological reflexivity. By capturing these pathways, I make a normative contribution beyond the human welfare and limited environmental commitments of previous studies on industrial disasters. I chose ecological reflexivity as a normative framework because of its transformative commitment to seriously respond to environmental issues.

Now I turn to presenting the signs and components of ecological reflexivity, and the criteria for identifying minimum reflexivity and the deficits of reflexivity.

### **1.3.1 Signs of recognition**

Institutions ought to manifest three signs of the *recognition* component of ecological reflexivity: awareness, monitoring, and anticipation. The first sign of recognition is *awareness* of the effects of institutions on social-ecological systems and the effects of changes in these systems to institutions (Pickering 2018). This includes the relationship of discourses to these systems, whether those discourses promoted by institutions or other discourses in the system affecting institutions and their practices. The second sign is *monitoring* previous and present reciprocal effects between institutions and social-ecological systems (Pickering 2018). This implies that recognition should be active for institutions and practices to continue being reflexive. The third sign is having a capacity to *anticipate* future effects of and on social-ecological systems. Given that signs of recognition take into account past, present, and future effects and interactions, the component should be ongoing for institutions to remain reflexive.

### **1.3.2. Signs of rethinking**

The *rethinking* component ought to manifest in signs that traverses three kinds of processes and time periods: learning, critical reviewing, and envisioning. First, reflexive rethinking involves *learning* from the past successes and failures of institutions' interactions with social-ecological systems (Pickering 2018). Second, institutions must have the capacity of *critically reviewing* their values, whether explicit or implicit, and their ways of achieving these values (Pickering 2018). Third, reflexive rethinking requires *envisioning* alternative futures. This process is

connected to the sign of recognition that foresees the impacts of socio-ecological impacts, but adds a normative component, i.e. reflecting on the worth of other plausible futures (Pickering 2018). Unlike recognition, reflexive rethinking is more periodic than a continuous process.

### **1.3.3. Signs of response**

For the *response* component, this can manifest with two signs. First, an institution's response can take the form of *rearticulating* its goals, ideals, or discourses (Pickering 2018). This can happen when an institution modifies its goals or adopt new discourses to reform its interactions with social-ecological systems. Second, an institution can respond by *reconfiguring* the relationship of its operations and practices to social-ecological systems which can happen in a number of ways (Pickering 2018). An institution may stop practices essential to its functions in favour of alternative practices that can benefit social-ecological systems. An institution may broaden its functions to respond to newly-identified environmental issues. An institution may change decision-making practices to allow outcomes with better consideration of environmental issues. Similar to rethinking, reflexive response is more periodic than a continuous process.

### **1.3.4. Minimum reflexivity and deficits of reflexivity**

These components and signs of ecological reflexivity can be useful for understanding deficits in the virtue. Pickering (2018) proposed that for an institution or practice to have *minimum reflexivity*, all three components of ecological reflexivity should be manifest to a certain extent. Above this minimum, greater manifestation of the components constitutes more reflexivity. Below this minimum would constitute varying degrees of *unreflexive* and *antireflexive* behaviour. Being unreflexive can manifest when there is recognition and response, but without sufficient rethinking (Pickering 2018). For example, when a mining disaster strikes, a mining company may feel compelled to immediately transform itself for publicity purposes without much time to think about transformative options. Similarly, government institutions can adopt new environmental regulations by uncritically emulating other powerful governments or transform

institutions by perfunctorily following a dominant discourse. Unreflexive behaviour can also manifest when there is recognition of environmental issues without rethinking and, hence, without corresponding response (Pickering 2018). This can happen, for example, when there is recognition of the adverse effects of industrial mining but continue to promote it as a development paradigm. Antireflexive behaviour can happen when components of ecological reflexivity are intentionally restrained (Pickering 2018), say, when a mining company suppresses the recognition component by downplaying signs of ecological degradation to justify the continuation of operations.

## **2. Philosophical worldviews**

Throughout the research process of this study, I use a realist ontology and interpretive epistemology, that are compatible with the use of the environmental discourse taxonomy and ecological reflexivity. Following Litfin's position (1995), Dryzek (2013) asserted the compatibility between a commitment to the real existence of environmental issues (realist ontology) and the social construction of our understanding of such issues (interpretive epistemology). With an interpretive epistemology, I acknowledge the different interpretations of environmental issues. These interpretations can be organised around discourses. Dryzek claimed that environmental discourses are influential in the way we "define, interpret, and address environmental affairs," though these affairs are not solely made up of discourses (Dryzek 2013, 12). Although environmental issues or crises are socially constructed, this does not diminish the reality of such phenomenon (Dryzek 2013). With a realist ontology, I consider the effects of industrial mining such as mining disasters and their catastrophic consequences to be real.

## **3. Empirical approach: Background of Philippine mining and case studies**

To answer the research question about the configuration of environmental discourses in Philippine mining, especially in the aftermath of mining disasters, I applied the environmental discourse typology to a broad and long view of Philippine industrial mining. My temporal scope extends from the genesis of the industry in colonial times to the contemporary period. My unit of analysis is the nation-state (or its preceding form during colonial times). Given the breadth of the study, I do not claim the kind of depth that you could expect in ethnographic

studies or micro-level case studies. However, at different periods, I bring in some depth in my empirical description and analysis by highlighting relevant local cases.

### **3.1 Background of Philippine mining and associated issues**

The Philippines has been known to have some of the richest mineral deposits in the world. It is not surprising, then, that it is one of the leading producers of nickel, a major producer of gold and copper, exports iron ore, chromium, zinc and silver, and produces oil and gas. In 2017, the Philippines was the world's top producer of nickel and then became second to Indonesia in the following year (U. S. Geological Survey 2019). A mining-based development paradigm has dominated the country's mineral resource policies (Tujan and Guzman 2002; Holden and Jacobson 2013). The Spanish colonial government (1565-1898) saw the economic development potential of the colony through massive mineral extraction but created the policy structure for mineral extraction belatedly and fell short of the technical resources to realise this potential (Lopez 1992). The American colonial government (1898-1941) had more success in massive mineral extraction by establishing dedicated policies and institutions, and having accessible technical resources (Lopez 1992; Camba 2015). After independence, the Philippine state policies continued supporting massive mineral extraction. Across regimes, the interests of different economic and political elites affected the mining industry (Aquino 1999; Kang 2002; Manapat 1991) but the state on the whole supported a mining-based development paradigm (Tujan and Guzman 2002; Holden and Jacobson 2013).

Advocates of a mining-based development strategy believe that there have always been impediments in realising the mining potential of the country. Some of these impediments are conflicts that have been plaguing the development and growth of Philippine industrial mining. These conflicts can be overtly coercive or subversive. Some contemporary examples are the setting up of barricades by local residents, the breaking up of these barricades by state and private armed groups, street protests by anti-mining groups, forced displacement and harassment of local residents, or damaging mining company equipment by rebel groups to delay operations.

These contemporary overt conflicts over Philippine minerals are not new. During the colonial period (1565-1941), there were violent territorial conflicts over mineral resources between the colonisers and the local population. Early Filipino miners defended their mineral lands, territories, and autonomy from encroachment by Spanish colonial governments (1565-1898) (Lopez 1992; Camba 2015; Habana 2001; Barclay 2003; Scott 1974). During the American colonial period (1898-1941), colonial miners were able to encroach on mineral-rich lands that were previously staunchly guarded by early Filipino mining communities (Lopez 1992; Camba 2015; Barclay 2003). The Benguet mining district was at the centre of these colonial struggles over mining (Habana 2001, Barclay 2003; Scott 1974) and will be discussed below as one of the cases in this study. Today, armed violence can be involved in conflicts between mining companies and surrounding communities with anti-mining sentiments. Community members who are against mining may join rebel groups allies (Holden and Jacobson 2007). In turn, this can legitimise the government's militarisation of the surrounding communities around mining operations (W. N. Holden and Jacobson 2007; W. Holden, Nadeau, and Jacobson 2011).

Alongside overt conflicts are those that are more subtle, like conflicting environmental discourses about nature and natural relationships that underpin the claims of major actors in Philippine mining. Colonial governments, the Philippine state, and big businesses developed and established the mining industry based on ideas that align with the Promethean discourse, i.e. a belief in the abundance of mineral resources that should be exploited for human needs. These ideas dominated Philippine colonial and state policies on mineral resources.

The Promethean belief on abundant nature, however, has been challenged since the 1970s when environmental protection ideas permeated Philippine policies. In 1977, the Philippine state promulgated the foundational environmental laws of the country. Counter-discourses to the dominant Promethean discourse grew alongside the UN conference declarations on the environment and development, the enactment of environmental laws in different countries, and the growth of the Philippine environmental movement. Some of the claims of the movement against mining have been underpinned by environmental knowledge about the limits of natural resources and nature's fragility.

Discursive conflicts around mining become more pronounced when disasters occur, particularly the infamous Marcopper Mining Disaster of 1996. The disaster will be discussed below as one of the cases in this study.

### **3.2. Overview of cases**

My criteria for selecting cases were determined, first, by the ability of a case to empirically illuminate the national level situation in industrial mining (e.g. the Benguet mining district). The other criteria is the illustrative strength of cases to show diverse contexts.

The cases used for this study are:

**The Benguet mining district.** In the early history of the development of Philippine industrial mining, the Cordillera mountains was identified by Spanish and American colonisers as an area with rich mineral deposits. In particular, the Benguet mining district had been central in the story of efforts to industrialise mining in colonial times. Although there is no dedicated chapter on mining in the Benguet district or the Cordillera mountains, I often discuss what happened in these areas during colonial times because most of the (industrial) mining wealth and activities in the archipelago had been concentrated in these areas. The Benguet mining district and other parts of the Cordillera mountains were prominent sites of different types of struggles, including discursive ones, leading to the development of Philippine industrial mining. There were also early signs of ecological degradation that could have prompted response in the early years of the sector's industrialisation.

**Three mining disasters due to Marcopper Mining Corporation's operations.** I selected three mining disaster cases due to the operations of Marcopper Mining Corporation (MMC) in Marinduque Island. Canadian firm Placer Dome, Inc. owned almost 39.9% of the shares in Marcopper until its divestment in 1997. I focused on these mining disasters because they collectively illustrate rich empirical data for discursive struggles in the context of industrial mining. The empirical and normative significance of the three mining disasters can be attributed to temporal, political, and physical environmental factors. First, the mining disasters occurred in a span of over

two decades with impacts that, arguably, can be still felt today. This long history provides robust data for empirical and normative analyses. Related to this history, the second factor is that the mining disasters witnessed changes in the political context alongside the maturation of the environmental movement that makes it possible to draw differentiated empirical and normative analyses. Finally, differences in the nature of each mining disaster allow inquiry into the role of the physical environment in generating salience for discursive struggles and, ultimately, ecological reflexivity. Each of the three mining disasters can be characterised differently, namely: slow onset, sudden onset yet diminished, and sudden onset and spectacular. The slow onset disaster involved the release of mine waste into Calancan Bay from 1975 to 1991. The sudden onset yet diminished disaster occurred in 1993 when floodwaters during a typhoon damaged an earthen dam and the floodwaters gushed into Mogpog River that submerged the town, killing two residents. Despite the dramatic event, the mining company refused to take responsibility, claiming that the disaster was due to the heavy rains brought about by the typhoon. The sudden onset and spectacular disaster occurred in 1996 when one of the mine tailings dams was broken resulting in the gushing of mine waste in Boac river that buried a village and damaged livelihoods and properties. Unlike the previous two disasters, the 1996 disaster resulted in policy reforms by government and substantial reparation by the mining company.

There are other well-known mining disasters in the Philippines, such as the 2012 mine spill by Philex Mining Corporation in Itogon, Benguet and the 2005 mine spills by Lafayette Philippines Inc. in Rapu-Rapu Island. But I contend that these disasters do not have the same salience for empirical and normative analyses as the mining disasters in Marinduque Island in terms of the temporal, political, and physical environmental factors I discussed. The salience of the mining disasters in Marinduque is manifested in the continuing coverage of the disasters in Philippine media. For example, just a few weeks before I commenced field research in April 2016, a marker was unveiled (Billones 2016) on March 24 to commemorate the 20<sup>th</sup> year since the 1996 sudden onset and spectacular mining disaster hit Marinduque. It is often described in superlative and dramatic language. In 2013, Holden and Jacobson propositioned that it is “perhaps the *most notorious* [emphasis added] example of a tailings impoundment failure...” (Holden and Jacobson 2013, 68). Similarly, they found superlative and dramatic descriptions from other works:

According to Tujan (2001, 154), “the Marcopper accident *shocked* and *traumatized* the Philippine nation.” The incident caused the nation to give a ‘collective *gasp of disbelief*’ (IBON 20006a, xviii). Bello et al. (2009, 224) described the spill as, ‘the *biggest* industrial accident in the country’s history.’ To Hatcher (2010, 9), the spill has come “to be known as the *worst* environmental incident *ever* sustained in the Philippines.” In the words of Stark et al. (2006, 5) the spill “has taken on *mythic proportions* in the Philippines.” Ofreneo (2009, 202) wrote that the spill caused “not only *untold damage* to the ecosystem but also *public alarm* over the environmental impact of mining.” [Emphases added.] (Holden and Jacobson 2013, 70)

Since the publication of Holden and Jacobson’s work in 2013, there have been other worse tailings dam failures such as the ones that occurred in Brazil in 2015 and 2019. But in the Philippines context, the mining disasters in Marinduque remain to have enduring impact in terms of challenging the mining industry and the state’s mining-based development. Therefore, it makes sense that if one were to use the lens of ecological reflexivity and look for responses to the shock of mining disasters in the Philippines, a good starting point would be the mining disaster cases in Marinduque island due to the operations of Marcopper Mining Corporation. Other significant mining disasters in Brazil and elsewhere in the Philippines (e.g. the mine spill in Rapu-Rapu Island in 2005 or in Benguet in 2012), can be studied later, say, for comparative purposes.

The contextual differences among the cases in temporal, political, and physical environmental terms provide rich lessons for empirical and normative analyses. Each case shows localised understandings of competing environmental discourses that can provide empirical depth to the national level situation. In turn, this empirical richness can provide important normative lessons in the context of industrial mining in the developing world.

#### **4. Data sources, data gathering methods**

This study is based on primary and secondary data sources. (See Appendix A for the list.)

Primary sources include:

- Corporate documents
- Government reports
- Transcript of speeches or addresses by politicians
- Court decisions
- Government legislation and implementing rules and regulation
- Organisational webpages
- Correspondences

Secondary sources include:

- Academic literature
- News and investigative reports from newspaper of record
- Civil society-led mission and assessment reports
- Technical reports

The study used text sources because document analysis is a well-established tradition in discourse scholarship. Although discourse analysis can also use non-text data sources, text-based data is still dominant in environmental discourse research (Leipold et al. 2019). The data sources used in the thesis, both primary and secondary, are considered authoritative sources. Below, I explain the process involved in locating relevant text sources and the field observation activities I participated in to get sufficient context for the textual data.

Data gathering of primary and secondary text sources available online began in May 2015 when proposal writing began for this project until the final writing stage in 2019. Some of the important keywords used in the search engine were: “Marcopper,” “Philippine mining,” “Placer Dome,” and “Philippine mining disaster.” After the initial online search, these keywords were set on a weekly RSS alert to keep me updated on the online presence of the case studies. The initial set of text sources led to other relevant materials for the study. I aimed to get copies of text sources not available online during my field work. Key informants assisted me in locating these materials and identifying new ones that they deemed relevant for the study.

Field data gathering of primary sources and secondary sources (including digital and hard copies of text materials not available online) was done from April 2016 to August 2016. At times, I was given hard copies of text materials like monographs and organisational publications that were meant to be given freely to the public or certain sectors. In most cases, though, text materials had to be copied digitally or photocopied.

Key informants who assisted in gathering sources include: NGO staff, community organisers and activists, politicians, bureaucrats, Environmental Impact Assessment (EIA) practitioners, environmental scientists, environmental lawyers, mining-affected community members, and mining industry employees and representatives.

During the field work period, I was hosted by the Ateneo De Manila University's Ateneo School of Governance (ASOG) as a visiting fellow, an affiliation I disclosed alongside my PhD candidature at the University of Canberra. ASOG provided me some workspace, access to university facilities, and leads on key informants and useful documents. Document search were conducted in the cities of Pasig, Quezon, and Manila in Metro Manila; Los Baños town in Laguna Province; and Boac town in Marinduque province. Except for field visits to Boac town in Marinduque province, the rest of field work period was spent mostly in major cities and towns of Metro Manila, and Laguna to meet with key informants and gather document sources.

From August 10 to 14, 2016, I spent the time in Boac town in Marinduque to meet key informants, gather documents, and observe public activities in the town centre and along Boac river that was severely affected by the 1996 mining disaster. I spent a considerable time perusing the document collection of the Marinduque Center for Environmental Concerns (MACEC), who has been leading the crusade of residents affected by the mining disasters that befell their island. MACEC has organised files of documentary evidence used to support legal cases against Marcopper.

To get actual grounding on the configuration of dominant discourses in Philippine mining and my cases, I and my research assistant observed mining-related activities, such as protests, fora, and NGO meetings. On July 12, 2016, research assistant Daphne Joyce Maza attended a private conference on the legal cases filed by Marinduque residents against Marcopper Mining Corporation in relation to the mining disasters. The meeting was attended by

plaintiffs, legal counsels, and NGO representatives supporting the plaintiffs, such as MACEC and *Alyansa Tigil Mina* (ATM) or Alliance Against Mining, and other stakeholders. Daphne was allowed to record the proceedings and take notes. On July 19, 2016, I attended a national anti-mining forum in Quezon City attended by national and local activists, who shared the impacts of the mining operations to their communities. On July 25, 2016, I attended the rally organised by civil society network BAYAN or *Bagong Alyansang Makabayan* (National Patriotic Alliance) during the first State of the Nation Address of newly-elected Philippine President Rodrigo Duterte. I joined the contingent of indigenous groups, whose territories are often affected by mining operations. On August 8, 2016, I attended a public forum in celebration of the International Day of World Indigenous Peoples. Mining-affected residents attended this forum with some of their leaders presenting their claims against the negative impacts of industrial mining to their communities. While data used in this study was not directly drawn from these activities, attending these events was important for networking with key informants and for observing the articulation of environmental discourses. These observations served as background in my analysis.

## **5. Data analysis**

I used interpretive methods to analyse the data used in this study. The interpretive analysis is an iterative process where I carefully turned back and forth between the data and the conceptual framework. This process enabled me to refine the conceptual framework, use the conceptual framework to select and focus on the most relevant data, and identify areas where the data can contribute towards a different understanding of existing concepts and the creation of new ones. The starting point was my background knowledge on mining issues in the Philippines. At this stage, Dryzek's taxonomy of environmental discourses already appeared to be useful concepts. For example, the process of environmental impact assessment, a salient topic in Philippine mining, can be explained using administrative rationalism. Likewise, the industry's adoption of responsible mining appeared to be influenced by the sustainable development discourse.

Guided by environmental discourses, I selected relevant materials from the body of documents I gathered for this study. From this smaller selection, I analysed the texts using a coding criteria based on the elements of environmental discourse: basic entities recognised or categorised, assumptions about natural relationships, agents and their motives, and key

metaphors and other rhetorical device (Dryzek 2013). In keeping with an iterative process, Dryzek's environmental discourse taxonomy was used as a guide and not as a predetermined structure. This process enabled a critical interpretation of the empirical data to determine parts of the data that fit in or deviate from the elements of particular environmental discourses. In some cases, fundamental deviation of the data resulted in opportunity to fully develop environmental discourses that were briefly characterised by Dryzek (2013).

This study's analytical method assumes that "language matters, that the way we construct, interpret, and discuss, and analyze environmental problems has all kinds of consequences" (Dryzek 2013, 11). Interpretations are mostly based on language use, whether written or spoken, a common emphasis in interpretive research (Yanow and Schwartz-Shea 2013).

## **6. Positionality**

In undertaking an interpretive analysis, I am conscious of what Giddens (1986) called the double hermeneutics problem, that scholars interpret others' interpretations of a situation. Double hermeneutics exposes the limitations of single hermeneutic analysis that often privileges the interpretive agency of the scholar over the interpretive agency of the actors under study (Jackson 2013). I acknowledge that this study's analyses and prescriptions foreground my interpretive agency and the plausibility of my interpretations rely on the comprehensiveness of my knowledge on mining issues through my PhD research. I consciously worked on building this comprehensive knowledge because of the distance between me as a researcher and the topic when I began the project. In some ways, I consider myself to be an 'outsider' from the topic and the cases I studied given that I do not have previous mining research experience. This is not entirely a disadvantage though. A researcher's outsider status could enable him or her to see patterns that an insider may not easily see (Johnson 2015). However, from this outsider status, the researcher needs to bridge this distance by aiming to have comprehensive knowledge of the case study (Johnson 2015), or the research more broadly. In other ways, I would say that I have "insider" status." Before doing the PhD, I gained background knowledge on industrial mining issues from the perspective of indigenous groups affected by mining. Indigenous issues usually intersect with environmental and natural resource extraction issues. I conducted previous studies on Philippine indigenous peoples and their rights. I was also personally involved as an advocate for upholding indigenous rights.

I was conscious of my position as an outsider and insider during my data gathering and analysis. On the one hand, when it came to the industry and government side of mining issues, I had to actively build thorough knowledge of their side of the story. Most of the early characterisations I know of the industry and government were based on information I got from anti-mining civil society groups and mining-affected residents. I addressed this by gathering substantial primary and secondary data sources from the other side. On the other hand, my insider position meant I had background knowledge of the mining issues from the perspective of civil society groups who oppose industrial mining. My existing network with networks with NGOs and other civil society organisations was helpful in gathering data among these actors.

## **7. Ethics approval**

Prior to field work, the research project, including its ethical conduct, was thoroughly reviewed by two research supervisors and by two other academics who served as assessors of the research proposal. Then, the proposal was reviewed by University of Canberra's Human Ethics Research Committee. It was approved by the committee on February 17, 2016.



## Chapter 3

### **Industrialising Philippine mining, Promethean discourse domination (1565 to 1965)**

Historical discourses shape contemporary practices of industrial mining. The competing discourses that industry, government, environmentalists, and indigenous peoples advance today are connected to historical patterns of reinforcement and resistance of knowledge claims about industrial mining. These knowledges are embedded in discourses can be traced from over four centuries, from the Spanish colonial period that began in the middle of the sixteenth century to the post-independence Philippine state after World War II.

Philippine industrial mining development is pervaded by discursive shifts and struggles. In this chapter, **I argue that the full development of Philippine industrial mining was accompanied by the domination of the Promethean discourse.** This meant a shift from a non-industrial cornucopian discourse and the undermining of the indigenous sustainability discourse.

When the pioneers of the Spanish colonial government (1565-1898) arrived in today's Philippine archipelago, they observed elements of the *indigenous sustainable discourse* in the mining practices of early Filipinos. This discourse remains present to date, albeit in a disadvantaged form. Spanish chroniclers and pioneers observed early Filipinos practice subsistence mineral extraction. The indigenous sustainable discourse was threatened because, in contrast to early Filipino miners, the colonisers intended to amass wealth for the Spanish Crown through massive natural resource extraction. This intent was accompanied by the Spanish colonial government's subscription to a *non-industrial cornucopian discourse* that considers mineral resources to be abundant, almost in an absolute sense. However, Spanish colonisers achieved limited success in massive mineral resource extraction the Philippines in part due to their lack of resources and capacity in mechanised technology. The full development of Philippine industrial mining happened during the American colonial period (1898-1941) that was accompanied by what Dryzek (2013) describes as the *Promethean discourse*. In terms of industrial mining, the Promethean discourse considers mineral resources as abundant, and that imminent scarcity, say from over-extraction, can be overcome with mechanised technology. The Promethean discourse accompanied the Industrial

Revolution and Euro-American imperialism in the late nineteenth and early twentieth centuries, and subsequently shaped the character of industrial mining development in the Philippines. The domination of the Promethean discourse and its commitment to mechanised technology meant a shift from the Spanish colonial period's subscription to a non-industrial cornucopian discourse. As a result, the threat to the indigenous sustainability discourse during the Spanish colonial period became an actual undermining of the discourse held by early Filipino miners. The Promethean discourse continued to dominate after the independence of the Philippine archipelago after the Second World War.

Amid changing powers and governments, war and peace, technological development and environmental degradation, viewing the development of Philippine industrial mining through discourses lays bare the cognitive commitments to nature and natural relationships.

This chapter contributes to adding an environmental dimension to existing political economy and geopolitical explanations on Philippine mining outcomes. It also modifies Dryzek's (2013) elements of the Promethean discourse. While the major elements of the Promethean discourse are present in the empirical analysis, the discourse was highly associated with Philippine state intervention that is not a feature of the discourse as standardly presented.

### **1. Overview of Philippine industrial mining development; findings of political economy and geopolitical scholarships**

The Philippines was colonised by the Spanish from 1565 to 1898 and by the Americans from 1898 to 1941. The archipelago became part of the Spanish Empire's territorial, religious, and economic expansion. One of the economic opportunities seen by Spanish pioneers was in massive extraction of minerals. Initial surveys indicated the abundance of precious metals (Lopez 1992). They also observed that the local population extracted small amounts of minerals based on needs (McKenna 2017). However, this economic potential was not realised during the Spanish colonial regime.

Findings of existing scholarship provide political economy and geopolitical explanations on why Spanish colonisers missed the mineral resource extraction potential of the colony. Lopez (1992) and Scott (1974) showed that early Filipino mining societies successfully defended their territories from colonial encroachment. For example, this was apparent in the Benguet

mining district, located in the northern part of Luzon island, known for its rich mineral lands at the time and its societies with skilled miners. Brading and Crossing (1972) showed that the Spanish Empire was able to profit from minerals coming from colonies in Spanish America. Even though the Philippine colony did not provide considerable profitable goods for the empire, Bjork (1998) showed that it was significant as a trading post for the exchange of goods between Spanish America and Asia through the Manila Galleon trade (1565-1815).

When the Manila Galleon trade ended in 1815, the empire was poised to support the agricultural and industrial development of the Philippine colony for economic gains (Lopez 1992). Profitable goods like sugar and tobacco supported the administration of the colony. However, Lopez (1992) asserted that industrial development, including in the mining sector, did not improve substantially. On the whole, massive mineral extraction in the colony was not realised during the Spanish colonial period.

In 1898, the Spanish Empire sold the colony to the United States. The American colonisers succeeded in massive mineral extraction and industrialising the mining sector during its colonial rule. During this colonial period, there were mining boom episodes particularly in gold production (Lopez 1992; Habana 2001). Existing scholarship can provide political economy and geopolitical explanations for the success of American colonisers in the mining sector. The findings of Lopez (1992) and Camba (2015) showed that American colonial pioneers were able to encroach the mineral lands of mining communities. Barclay (2003) also explained that unlike the Spanish Empire the United States had more financial resources and capability. Habana (2001) provided an illustration of this in the Benguet mining district that had detrimental consequences to the traditional systems of societies in the area. The American colonial miners intermarried with locals and altered their political and economic systems to set conditions for massive mineral extraction and industrial mining development (Habana 2001). The success of American colonial mining halted in 1941 at the beginning of the Pacific war.

When the war ended in 1945, the United States granted independence to the Philippine colony in 1946. Existing scholarship that looked at the revival of the mining industry provides political economy explanations for the initial slow recovery and later flourishing of the mineral sector. After the war, there are two major explanations for the slow recovery of the sector. Camba (2015) attributed the sluggish progress in the 1940s and 1950s to nationalist

developmentalism that manifested in protectionist policies that supposedly disadvantaged the American-owned mining giants during the American colonial period. Lopez's (1992) countered this by arguing that state intervention actually benefitted the mining sector. Lopez (1992) also provided a different explanation, i.e. markets, by citing the influence of global mineral prices to the initial slow recovery after the war. He holds the same explanation for the later flourishing of the mining sector, particularly for copper producers (Lopez 1992). My analysis below for the post-war period complements the findings of Lopez (1992).

In the analytical discussion below using elements of environmental discourses, I show how environmental discourse analysis complements existing scholarship by providing the environmental dimension of these political economy and geopolitical explanations.

## **2. Early Filipino mining and indigenous sustainability discourse**

Upon the arrival of Spanish and American colonisers in the Philippine archipelago, they observed early Filipino miners to exhibit elements of the indigenous sustainability discourse. They observed this particularly among early Filipino miners in the Cordillera mountains, a region that has been a productive site of mineral extraction both for the country and the world. Indigenous peoples of the Cordillera mountains are also collectively known as Igorot. These early Filipino miners and their descendants: 1) recognised or constructed subsistence mining, local nature, and future generations; and 2) assumed communitarian natural relationships.

### **2.1. Construction of subsistence mining; recognition of local nature and future generations**

#### **2.1.1. Subsistence mining**

When the Spanish colonisers arrived in the Philippines, they observed early Filipino miners' small mining production based on needs. Antonio de Morga, who became lieutenant governor of the Philippines in 1593, noted in the early seventeenth century that the Igorots only extracted the amount of gold they needed and traded it for goods from the lowlands (McKenna 2017, 32). The Igorots refer to the different ethnic groups living in the Cordillera mountains located in the northern part of Luzon, the country's largest island. Igorot was not a

self-ascribed collective name but was introduced by outsiders during the Spanish colonial period (Finin 2005). Martin de Rada, a member of the Spanish expedition that set up the first colonial settlement in the archipelago, recounted in 1569: “No one of these Indians has more than a very little gold. If they get a couple of pairs of earrings and a couple of pairs of bracelets and a pair of ankles for the feet, they do not look for any more: they do not strive to hoard it” (Lopez 1992, 18).

The low mineral production of early Filipino miners was achieved using simple methods and basic tools. Lode and placer mining activities were identified by Spanish explorers and officials across different parts of the country (Lopez 1992). Archaeological studies found remains of old mines in Aroroy, Masbate; Angat, Bulacan; Paracale-Mambulao, Camarines Norte; Mankayan, Benguet; Placer, Surigao; and Baguio (Lopez 1992, 8). For example, in the old mining districts in today’s Benguet province, the observations of Spanish administrators pertain to basic methods of extraction by Igorots in Benguet. The Spanish military expedition leader Alonzo Martin Quirante observed in 1624 that Igorot miners dug tunnels in many sites and used wooden pickaxes with iron tips to chip the ore (Caballero 2001, 171). By hand, Igorot miners used rocks and stones to crush the ore into powder which was washed in streams making the gold discernible as they sparkle under the sun. Large ores were milled and washed repeatedly until not much metal remained. Apart from the Kankana-ey and Nabaloi tribes of Igorots, other renowned miners at the time were the Surigaonons in northern Mindanao and the Bicolanos in southern Luzon (Lopez 1992). In Camarines Norte’s Paracale-Mambulao district, one of the most accessible to the Spanish, Filipino miners at the time practised gold panning, a form of placer mining.

### **2.1.2. Local nature**

In a study on the perspectives of Igorots on community development, the findings of Adonis (2011) show that the respondents’ indigenous identity and self-determination are bound up with belonging to their local place and accessing its natural resources. This recognition of local nature is similar to the experience of other groups who identify as indigenous (Houde 2007; Berkes 2008; Corn tassel 2008).

*Future generations.* As part of inter-generational accountability, Igorots revere their ancestors and their legacies (Adonis 2011). Like other indigenous peoples, they have a strong sense of responsibility to pass on their legacies, including their ancestral territories to future generations (Cornassel 2008). One of the contemporary heroes of Igorots, Macli-ing Dulag of the Butbut tribe, emphasised this recognition of future generations when he led the opposition of the construction of a large-scale dam in the late 1970s and early 1980s. Dulag claimed that the land belonged to the tribe and that the tribe lives forever (Doyo and Castro 2015). This is one of their justifications for opposing the dam which would have wiped out their ancestral territories and deprive this legacy from future generations.

## **2.2. Communitarian natural relationships (i.e. a reciprocal responsibility to one another)**

Igorot society practised forms of communitarian living (W. H. Scott 1974). When the American colonisers arrived in Benguet, they found a society that was hierarchical but with reciprocal responsibility to one other. Natural resources such as mineral lands were owned by clans or individuals which was widely known by the community. A traditional elite class called *baknang* led Igorot society. A *baknang* kingroup usually owned pastureland held in trust by its leader. Pastureland may include water holes, house lots, swidden areas, and crop fields not necessarily owned by the *baknang*. Traditional land ownership was a sharing system with mutual obligations for different members of Igorot society (Habana 2001). Slave labour was acceptable at the time and the *baknang* used this labour in their economic activities. *Baknang* wealth was based on ownership and control of mineral resources, which was economically worthy insofar as it was an instrument for acquiring cattle and riceland which were the actual indications of wealth in Igorot society (Habana 2001). Cattle was important because the *baknang* held feasts for the clan and labourers as part of food-wage exchange and distribution of wealth. These social, political, and economic practices as a whole indicate features of communitarian relationships within Igorot society.

### **3. Spanish colonial mining and the non-industrial cornucopian discourse (1565-1898)**

During the time referred to as Old Imperialism (1450-1750) (Scammell 2003), colonial and imperial powers subscribed to the non-industrial cornucopian discourse as they expanded their power, economies, and territories. Colonisers presumed that there were many abundant new places to expand into. During this period of mercantilism, the Spanish Empire's trading ships, the Manila Galleon, were sailing from 1565 to 1815 between Spanish America and Asia. From the late eighteenth century, the Spanish Empire introduced free market economic reforms and desired to shift from labour-intensive technology to the Industrial Revolution's capital-intensive, mechanised technology. The Spanish Empire failed in making this technological shift. As a result, Spanish colonial mining manifested elements of the non-industrial cornucopian discourse. First, Spanish colonisers and colonial miners recognised or constructed abundant natural resources, nature as "brute matter", and labour-intensive technology. Second, Spanish colonisers assumed hierarchical and competitive relationships. The Spanish colonisers' subscription to the non-industrial cornucopian discourse threatened early Filipino miners' subscription to the indigenous sustainability discourse because the two discourses have contrasting views regarding nature and natural relationships. However, the threat was not realised as the societies of early Filipino miners successfully defended their traditions and territories, and the Spanish Empire was able to profit from minerals coming from Spanish America.

#### **3.1. Recognising abundant natural resources; constructing nature as "brute matter" and labour-intensive technology.**

##### **3.1.1. Abundant natural resources**

Early on, the Spanish realised the archipelago's abundant natural resources and its potential for wealth accumulation through mineral extraction. Using observation and surveying techniques, colonial pioneers documented the presence of mineral lands in the archipelago. The first Spanish expedition led by Ferdinand Magellan reached the Philippines in 1521 and later in 1565, Miguel Lopez de Legazpi set up the colonial government. Unsolicited surveys from Magellan's expedition in 1521 identify the presence of minerals in parts of southern Philippines—Butuan and

Caraga—and in Mindoro islands, towards the north (Lopez 1992). Much of the written documentation regarding pre-Spanish colonial mineral extraction practices in the Philippines were recorded in these early contacts between Filipino miners and Spanish colonial administrators. Placer gold and bar iron have been some of the goods traded with the Chinese for centuries. Although mining was not a regular practice at the time in most communities due to the seasonal demand for trading, Spanish colonial pioneer Legazpi observed in 1569 that the locals always had enough gold for trading (Lopez 1992, 18). These early information by Spanish colonial explorers and pioneers formed the foundation of knowledge on the archipelago's abundant natural resources. Early Spanish colonial mining policies until the eighteenth century already expressed the abundance of mineral resources. Spanish administrators regulated mining activities through *cedularios* and *expedientes* (rules and regulations) that “pertained to mineral deposits in various districts of the country” (Lopez 1992, 29).

### **3.1.2. Nature as “brute matter,” labour-intensive technology**

Spanish colonial mining transformed natural resources from ‘brute matter’ into useful and profitable minerals using labour-intensive technology that included not only simple methods and basic tools but also improved techniques using chemicals and crushers powered by animals and water wheels.

The Philippine colony participated in Spanish colonial mining as a trading post for the flow out of silver from Spanish America to Asia. In Philippine colonial mining, the failure in mining development was evident in areas where the Spanish colonial government had access to mineral lands. Towards the end of its colonial rule, basic infrastructures are not yet in place because mining development had been previously neglected. This was the case for the British outfit Philippine Mineral Syndicate in the 1890s in the Paracale-Mambulao region, an accessible area with some of the better developed mines at the time. Building mine infrastructures took so long, such that by the time that operations was ready, mining activities were halted due to the Philippine revolution that broke out in 1896 (Lopez 1992). In Sugud, Albay, a coal mine that began mine development in

1874 had to do substantial infrastructure building developments, such as road construction (Lopez 1992).

Historical accounts document the flow out of Mexican and Peruvian silver to the Philippines, which was then traded for Asian goods (Brading and Cross 1972; Schurz 1918; TePaske and Klein 1981; Bjork 1998). Along with profits from minerals came further investments in mineral production in Spanish America (Brading and Cross 1972; Garner 1988), including improvements in mining techniques. Available historical data documents improved mining techniques in colonial Mexico and Peru (Brading and Cross 1972) compared to the basic mining techniques of early Filipinos observed by Spanish colonisers. These improved mining techniques in Spanish America, however, were not yet as modern as mining techniques during the Industrial Revolution when the steam engine, for example, was used in mining. I base my assertion of improved mining techniques in these colonies on the findings of D. A. Brading and Harry E. Cross (1972) on colonial silver mining in Mexico and Peru. Their work is useful not only for its focus on the colonial silver mining history in Spanish America but also for its critical review of available historical data.

Improvements in extracting and refining minerals was prominent in colonial Mexico and to a certain extent in colonial Peru. Mexican extractive innovations include digging deep shafts and using multiple whims drawn by horses (Brading and Cross 1972). To penetrate deep levels underground to access more minerals, the use of gunpowder for cartridge blasting had been used. There is no definite documentation when cartridge blasting was first introduced in colonial Mexican mining. The earliest documented use was in the 1720s; other major excavations in the late 1700s largely depended on cartridge blasting. The basic whim, a simple hoist often powered by hand, developed into a powerful device that was drawn by horses, to haul material from a shaft. The improved whim became popular, such that, by the end of the eighteenth century, one Mexican mine had eight whims for one central shaft. Like in Mexico, cartridge blasting was used to excavate shafts and adits, near horizontal tunnels, in colonial Peru. The earliest recorded use of gunpowder for blasting was in 1631.

Refining processes using chemicals and crushers powered by animals and water wheels were developed in colonial Mexico and Peru (Brading and Cross 1972). In Mexico, Spanish merchant Bartolome de Medina conducted experiments in 1554 to develop the amalgamation process using mercury and salt. Another simple yet efficient refining process was developed by crushing ores using a stamp mill and an arrastra, a device using drag stones powered by a mule. The arrastra is believed to be invented in the early eighteenth century in colonial Mexico. By the end of the eighteenth century, colonial Mexico was known for the size of its refining areas and its high level of technical expertise. As refining improved so did the circulation of technical knowledge. By the end of the eighteenth century, five books had been written on refining processes. In colonial Peru, the use of lead was introduced in simple refining processes in the sixteenth century. In 1572, Fernandez de Velasco introduced an amalgamation process similar to the one pioneered by de Medina in Mexico. This process was later improved by others. By the early seventeenth century, most Spanish American silver was processed by amalgamation. Stamp mills, powered by horses and water wheels, were also used in refining. Mercury was also used especially for deeper or older mines.

Based on these accounts, it appears that improved mining techniques was more extensive in colonial Mexico than in Peru. Yet, both colonies were able to make significant contributions to Spanish imperial silver trading throughout the history of the Manila Galleon (Garner 1988; Brading and Cross 1972). An explanation given by Brading and Cross (1972) for this phenomenon is that whereas Mexico had a considerable number of professional miners, Peru had access to cheap labour that made up for its relative shortfall in technical capacity.

### **3.1.3. Persistence of labour-intensive technology**

In the latter half of the eighteenth century until the Spanish Empire's demise at the end of the nineteenth century, the empire's capacity remained at the level of labour-intensive technology despite its attempt to shift to capital-intensive (mechanised) technology. Other European colonial powers like Britain industrialised different economic sectors, like mining, with increasing mechanisation by using the steam engine and other advanced machines and

devices. Other European colonial powers at the time actively participated in the Industrial Revolution that propelled the expansion of their territories (Ward 1994; Ocheni and Nwankwo 2012). At the start of the Industrial Revolution in the latter half of the eighteenth century (Hobsbawm 1996; Inikori 2002), some European colonial powers invested in modern science and technology using mercantile capital (Elena and Ordóñez 2000). However, the Spanish Empire, including in the Philippine colony, was late in technological development and did not have the capacity in modern science and technology.

After losing the Seven Years' War (1756-63), the Spanish Empire experienced an economic crisis. This led to policy reforms that shifted the empire's mercantile policy towards some features of free market economy, including in colonial Philippines. Also, one of the backbones of the empire's mercantile economy, the Manila Galleon, last sailed from Acapulco to Manila in 1815 amid the Mexican War of Independence that broke out in 1810. These changes saw an attempted shift for the Spanish Empire towards capital-intensive, mechanised technology.

During this period, the Spanish colonial administration in the Philippine colony was poised to support the colony's agricultural and industrial development to push for economic gains. In the Philippine colony, the colonial governor at the time, Jose Basco y Vargas, issued an economic plan in 1782 that prioritised agricultural and industrial development (Lopez 1992). There were some economic gains in agriculture though, initially, the economic practices remained restrictive. For example, the monopoly of tobacco production and trading that started in 1782 is also true for other cash crops (De Jesus 1980). These monopolies often exploited farming communities. Philippine goods, like sugar and tobacco, became competitive in foreign markets because of expanded agricultural production and export orientation. These profitable goods supported the costs of administering the colony that had been subsidised by colonial Mexico. Although monopolistic practices from the mercantile system persisted, colonial administrators introduced free market practices in this period, as more ports were opened and more foreign players entered the market (De Jesus 1980).

Industrial development did not improve substantially despite the priority given to industry that extended to mining development in the Philippine colony. The empire's lack of capacity in modern science and technology constrained efforts to industrialise the mining sector. During the Industrial Revolution, the Spanish Empire did not seize the opportunity to be an early adopter of modern science and technology. Elena and Ordóñez (2000) identified two reasons for the Spanish Empire's slow adoption of modern science and technology. First, the empire had an entrenched rentier attitude from centuries of mercantilism that enabled profits for the Spanish Crown without the need for serious technological advancement. Because of this attitude, the second reason is that the empire had difficulty drawing the important relationship between science, technology, and capitalism. To illustrate Spain's slow technological development, it only had its first steam locomotive in 1884 and had only one steel mill in the beginning of the twentieth century (Elena and Ordóñez 2000).

Compared to other leading European powers at the time, Elena and Ordóñez asserted that "Spain could not fully integrate science and technology into its own culture, and it also became incapable of modernizing the colonies" (2000, 81). In Spain and its colonies, there was not sufficient investment and efforts in the production of modern scientific and technological knowledge that could have begun in the Industrial Revolution. In the Philippine colony, developing scientific knowledge was hardly promoted, given that mass education in general was not a priority for the colonial government (Elena and Ordóñez 2000). If present at all, scientific knowledge and practice in the archipelago was confined among Spanish missionaries. Spanish colonial mining was seriously behind in mining techniques in the nineteenth century. In colonial Philippines, a coal mine in Sugud, Albay abandoned its operations in 1881 when it lacked capital for pumping machinery that was needed to extract the coal (Lopez 1992). Also in colonial Mexico, Brading and Cross (1972) noted that historical records show that as late as 1871, about seventy-one percent of Mexican silver was produced using refining techniques they developed in the sixteenth century.

At the time, the Spanish Empire was aware of its weakness in modern science and technology. In Spain itself, legislators sought to modernise their outmoded mining

practices to make the sector more profitable for the empire (Elena and Ordóñez 2000). But having no sufficient capacity and resources, Spain imported technological expertise, modern equipment, and capital. Because of this, foreign mining companies in Spain produced goods to supply the needs of their own countries instead of the needs of the Spanish economy. It turned out into reverse colonisation for Spain, “in effect being colonized by the great powers, because of its desire to acquire science and technology” (Elena and Ordóñez 2000, 74) Thus, the importation solution did not help Spain’s efforts to shift to capital-intensive, mechanised technology that is essential to industrialise colonial mining. The weakness of the Spanish Empire in modern science and technology was one of the reasons why labour-intensive technology persisted within the empire, as well as in Spanish colonial mining in the Philippines.

### **3.2. Assuming hierarchical and conflictual relationships**

#### **3.2.1. Hierarchical relationships**

The Spanish Empire assumed a hierarchical relationship as it dominated colonial subjects and territories, including natural resources that it deemed subservient to the empire’s needs. The colonisers traded mineral resources extracted from the Spanish American colonies to amass wealth for the empire. In colonial Mexico and Peru, the Spanish were successful in exploiting these colonies’ abundant mineral resources (Brading and Cross 1972) and intended to do the same in the Philippine colony (Lopez 1992). Spanish administrators also intended to dominate natural resources in the Philippine colony by establishing institutions and regulations.

From the middle of the sixteenth century until the end of Spain’s colonial era, Spanish America became the leading global supplier of silver (Garner 1988) that became profitable for trading through the Manila Galleon. The galleon trade assigned a commercial value to the Philippine colony as a trading post (Bjork 1998; Schurz 1918) and not for producing goods, such as minerals. This was an anomaly in so far as the mercantile system promotes the production of goods which is considered to be a profitable endeavour for a coloniser in a mercantile

economy. Although the trading activity in the Acapulco-Manila route was significant, it is unclear if this was a major reason for keeping the colony given that the costs of administering the Philippines had been subsidised by colonial Mexico. Among other reasons, historical accounts show that Spanish officials were motivated to keep the colony and the trading activities to continue the promotion of Christianity in the Philippines and the possibility of expanding empire in other parts of Asia through Chinese traders in Manila (Bjork 1998).

The Spanish colonial government promoted mineral extraction by building institutions and comprehensive policies. The Inspeccion General de Minas was formed through the royal decree of 9 March 1837. The mining regulating body was under the Direccion General de Administracion Civil. The agency's staff included two engineers and two support staff to the Inspector de las Islas. An inspector of the regulating body, Don Isidro Sainz de Baranda, persuaded officials in Manila that specific rules for mining operations were needed (Lopez 1992, 31). The Laws of the Indies, that governed the archipelago, was ambiguous regarding the regulation of natural resources including minerals (Lopez 1992). With the publication of the initial set of regulations for the industry on 14 January 1846, the Inspeccion was mandated to implement the rules. Its mandate covered bureaucratic roles, such as mine registrations and setting up geologic studies; and development roles, such as addressing lack of capital, poor roads and transportation networks, and the slow growth of the industry (Lopez 1992, 31–32).

Later, three foundational laws for mining were legislated: the Regalian Doctrine in the Decrees of the Superior Civil Government of 29 January 1846, the Spanish law of 7 July 1859, and the royal decree of 14 May 1867 (Lopez 1992, 29–30). These laws prescribed the rules for prospecting, locating, and developing mines. The Regalian Doctrine, in particular, stipulated that the state had control and ownership over all minerals and substances beneath all public and private lands (Tujan and Guzman 2002). Based on feudal tradition, the doctrine asserted the Spanish Crown's control over mineral resources unless acquired by special concession from the state (Brading and Cross 1972; Lopez 1992).

### 3.2.2. Conflictual relationships

Spanish colonisers assumed conflictual relationships as they encountered resistance especially from indigenous societies of early Filipino mining communities. In their quest to exploit the archipelago's mineral resources, the colonisers throughout their rule tried to subjugate the early Filipino mining communities to access their minerals and mining labour. This intent to subjugate these communities is documented in policies and historical accounts. However, these indigenous societies successfully defended their traditions, territories, and mineral resources. As a result, the Philippine colony did not contribute mineral wealth to the Spanish Empire who relied mostly from Spanish America for mineral products.

Although early on, Spanish colonisers showed a keen interest in the archipelago's minerals, access to some mineral-rich areas was difficult to gain because of local resistance and the lack of labour for mining activities. To illustrate the kind of challenge the Spanish colonisers faced in accessing mineral land and labour for mining, I turn to their experience in making efforts to infiltrate the Cordillera mountains in the northern part of Luzon, known as a source of rich mineral resources with locals having available skills in traditional mining. The Cordillera mountains are significant in Philippine and global mining history; during the Philippine mining boom in the early 1920s and 1930s, the mining operations in the Cordillera produced a considerable portion of global gold supply.

The Spanish colonisers considered the Cordilleras to be important in their quest for mineral wealth, and efforts to subjugate the Cordilleras' indigenous inhabitants were an enduring part of the colonial project. An evidence of this is that in early mining policies, the *cedularios* and *expedientes* (rules and regulations) on mining activities pertained to "the pacification of the Igorots in the gold district of the Cordilleras" (Lopez 1992, 29). Another evidence is the protracted fighting between the colonisers and the Igorots. The inhabitants of the Cordillera fiercely protected their territory from Spanish invasion, as documented by accounts from the sixteenth to the eighteenth centuries (Lopez 1992, 20–22; Antolin 1970). For instance, in the inhospitable terrain of the Cordilleras, an account of Spanish

expeditions into the territory written by Francisco Antolin in 1789 “makes clear that Igorot resistance to Spanish conquest was deliberate and continuous” (Antolin 1970, 181). The resistance is related to the Igorots’ possession of natural resources, including minerals. In an extensive study of Spanish-Igorot relations based on over a decade of archival and field work, William Henry Scott (1974) asserted that gold was one of the primary reasons for the protracted conflict between Spanish colonisers and Cordillera inhabitants. Spanish colonial official and historian Antonio de Morga noted in the early seventeenth century that “as long as [Igorots] could exchange their gold, wax, etc. against articles they lacked, and which were necessary for their subsistence, they would never allow themselves to be converted” (McKenna 2017, 33). In the nineteenth century, the colonisers repeatedly tried to conquer the Cordillera mountains with seventy-five military expeditions (W. H. Scott 1974).

Local resistance in mineral-rich lands of the archipelago was not exclusive to the Cordilleras. Even in the easily accessible Paracale-Mambulao district in Camarines Norte, colonial mining operations was difficult to sustain because of the costs needed to defend the area from attacks by Muslim Filipinos (Lopez 1992). As opposed to their access to professional miners and cheap labour in Spanish America (Brading and Cross 1972), the Spanish colonisers also failed to exploit the skills and labour of early Filipino miners in these mineral-rich areas.

To summarise Spanish colonial mining, the empire’s subscription to the non-industrial cornucopian discourse threatened early Filipino mining communities’ subscription to the indigenous sustainability discourse. However, the fierce resistance of these communities constrained colonial mining in the Philippines. What happened is that the empire succeeded in massively extracting minerals in Spanish American colonies and used the Philippines as a trading post for these products. The weaknesses of the Spanish colonial government in mine development in the Philippines were the strengths of the American colonisers who had more success in exploiting the archipelago’s mineral resources.

#### **4. United States colonial mining and the Promethean discourse (1898-1941)**

At the end of the nineteenth century, Spanish rule waned and a short-lived independent Philippine Republic was declared in 1896. In 1898, the United States and Spain signed the Treaty of Paris which legally made the United States sovereign in the Philippines. Filipinos resisted the entry of the new coloniser that led to the Philippine-American War from 1899 to 1902. The United States won the war and ruled the Philippines for over four decades as part of its complex imperial project in the Asia-Pacific motivated by ideological, strategic, and economic interests. Strategic expansion was primarily justified by ideological reasons, i.e. exporting liberal democratic system, and to a lesser extent by economic reasons (Bello 1998). In Latin America, economic interests came first; in Asia Pacific, however, these interests took a back seat. Walden Bello described this as “trade followed the flag more frequently than the flag followed trade” (1998, 368). This approach signalled a new chapter in imperial expansion. Julian Go (2003) said that this approach by the United States was influenced by domestic politics, particularly anti-imperialist groups, and a global outlook that made the United States avoid the exploitative character of other colonial powers.

Despite the primacy of United States ideological interests American imperial rule was still marked by significant, if not exploitative, economic activity that altered Philippine societies. The United States industrialised the mining sector during its colonial rule. Compared to the three-century rule of Spain, the United States accelerated natural resource extraction much more in its less than fifty years of colonial rule. This is especially true in upland areas where colonial encroachment not only meant resource exploitation but also the rapid transformation of indigenous societies, including those in the northern part of Luzon and areas of Mindanao (Habana 2001; Edgerton 2008; Schlegel 1994). Paul Barclay (2003) explained that this was possible because the United States was wealthier and technologically advanced compared to the Spanish Empire that allowed the new coloniser to keep pushing on its endeavours despite challenges and failures. The economic and technological strengths of the United States accompanied its subscription to elements of the Promethean discourse. First, American colonisers and colonial miners recognised or constructed abundant nature, nature as ‘brute matter’, and capital-intensive technology. Second, American colonial mining assumed hierarchical and competitive relationships.

The focus of this section will be in the Cordillera mountains, specifically in the Benguet mining district. Although mining operations happened in different parts of the country, gold mining in Benguet to a large extent represented the majority of mineral production during the United States colonial period which focused on gold extraction. In this period, the majority of gold production came from Benguet mines, the most productive area of gold extraction especially during the mining boom in the 1930s. Benguet mines are also significant internationally because during the United States colonial period's mining boom, gold production in the Philippines came second in the world after South Dakota (Camba 2015).

My discussion of United States colonial mining in Benguet engages with the works of Paul Barclay (2003) and Olivia M. Habana (2001). I chose these works because they have opposing views on the United States colonial mining in Benguet before the Second World War. Barclay (2003) portrays United States colonial mining from 1900 to 1915 in Benguet as an economic failure, while Habana (2001) portrays the broader temporal scope from 1901 to 1941 as an economic success highlighted by the mining boom. Barclay characterised the early years (1900-1915) of the colonisation of the Igorots of the Cordillera mountains by the United States as an economic disappointment in terms of not meeting the expectations of easy profits from mineral extraction (2003). He argued that this lack of economic motivation was the reason why the American-Igorot relations were relatively peaceful in comparison to the expensive and violent colonisation (1895-1915) of upland areas in Taiwan by the Japanese who were economically motivated to profit from camphor trees. Habana's broader temporal scope (1901-1941) presented United States colonial mining in Benguet as an incremental development of Philippine industrial mining leading to the 1930s mining boom. Habana (2001) argued that advances made by United States colonisers in Benguet meant the marginalisation of Igorot miners and their practices that significantly affected their traditional society. The negative impact of United States colonial mining on Igorot society was evident early on and intensified as colonial mining industrialised and encroached more ancestral territories. I share Habana's broader temporal scope and view the entire United States colonial mining in Benguet as a time incremental development of Philippine industrial mining. My innovation is the use of discourses to interpret the clash between colonial miners and Igorot miners, to highlight differences in knowledges in terms of recognition or construction of nature and technology, and assumption about natural relationships.

## **4.1. Recognising abundant nature and nature as “brute matter”; constructing capital-intensive technology.**

### **4.1.1. Abundant nature**

The American colonisers immediately recognised or constructed abundant mineral resources through survey techniques and observation. Early on, United States colonisers surveyed existing mining areas and explored new ones. Similar to the Spanish colonisers, the Americans immediately saw the mineral extraction potential of the archipelago, noting the basic mining methods previously used for extraction. When Spain ceded most of its colonies including the Philippines to the United States in 1898, American interest in minerals had been underway. As early as the 1890s, geological and economic surveys commissioned by the United States government produced a mineral map that supported the prospects of a mining industry in the colony (Lopez 1992). In 1901, an economic assessment of the Philippines reported “gold mines grow more favorable as the operations of prospectors are extended” because “modern gold mining machinery has never been used in the Philippines” (Camba 2015, 289). A key difference with the Spanish colonisers, though, is that the United States colonial government succeeded in exploiting the colony’s mineral wealth.

### **4.1.2. Nature as “brute matter”, capital-intensive technology**

Early on during the American colonial period, American miners extracted mineral resources by introducing capital-intensive technology and infrastructures. As early as 1906, Benguet Consolidated Mining Company (registered in 1903) installed a stamp mill and a sixty-ton cyanide plant (Habana 2001, 14). Benguet Consolidated is one of the first commercial mines in the country and remains to be a major mining business to this day. There was a rapid increase in the installation of stamp mills in other mines. In Benguet alone, industry production doubled from 1907 to 1908, largely attributable to the increase in stamp mills from three to eighteen for those years (Habana 2001, 14). The introduction of cyanide enabled a more efficient method of extraction. This was applied early on in Benguet and Masbate (Lopez 1992, 54, 86). The creation of better road networks allowed the

ease of transporting improved devices and mining supplies to mine sites. The Benguet mining district was connected to the lowlands with the completion of Benguet Road (now Kennon Road) in 1905 despite the huge cost and logistical challenges (Barclay 2003). Other roads were also built leading to other mines.

Pioneer prospectors' modest investments made these technological innovations possible. Early prospectors, mostly former American soldiers, persevered in setting up mining operations in the early 1900s (Habana 2001; Lopez 1992). Camba (2015) argued that "cheap natures", i.e. inexpensive land, labour, and food, made mining operations possible despite small investments and the challenging terrain. Despite the early interest in the archipelago's resources, mining investment in the early years built up slower than expected. Part of the reason was that American mining moguls—the Hearsts, Strattons, and Guggenheims—already had very profitable operations in the United States at the time (Lopez 1992, 114). An important economic innovation was the introduction of cash wage in Benguet (Habana 2001) that paved the way for the financialisation of the mining sector on its way towards industrialisation.

As the profitability of American colonial mining strengthened in the 1920s and 1930s, more investors stepped in that enabled mining companies to acquire capital-intensive technology and hire expert personnel. Major mining companies invested in advanced mining methods and machinery. For example, diesel engines were used in mining operations and advanced metallurgical processes made hard sulfide ores profitable (Habana 2001). These companies were also better organised and efficiently pooled resources. Road construction by mining companies also enabled ease of transportation of equipment and workers to remote mining areas. Professional expert knowledge formed part of the corporate structures (Lopez 1992). Organisational innovations allowed the regular employment of expert staff that were made available to other companies for a fee (Habana 2001). The expert knowledge of geologists, managers, and engineers not only professionalised the industry but also made gold production more efficient.

## **4.2. Assuming hierarchical natural relationships**

### **4.2.1. Dominating nature**

The American colonial government and colonial miners assumed hierarchical relationships by dominating nature through mineral extraction. They did this by successfully gaining access to mineral lands and mining labour, and creating institutions and policies to regulate the exploitation of minerals.

One of the major political reasons for American success in industrialising colonial mining was the persistent ability of early prospectors to gain access in mineral-rich lands. This included isolated territories of indigenous groups in northern Luzon and Muslim Filipinos in Mindanao (Camba 2015). In the early years of colonisation, American prospectors quickly gained access to minerals in Benguet, part of the fiercely guarded Cordillera mountains during the Spanish colonial period. This political gain is significant as the Benguet mining district, the biggest mineral concentration in the country (Lopez 1992), was very productive during the United States colonial period that saw the industry's boom years (Habana 2001). The relationship between early prospectors and locals appeared to have mutual benefits. The early prospectors befriended the locals, and some found local wives to gain a foothold in the Benguet mining district, while locals found allies in these prospectors whose rifles were useful to ward off outsiders, like other tribes and unfavourable American prospectors (Lopez 1992; Habana 2001). Related to this, with the early prospectors' initial success in establishing good relations with some locals, the availability of local workforce, mostly for unskilled positions, also followed (Habana 2001). For skilled positions, these were filled by personnel not originally from Benguet, such as Tagalog, Japanese, and Chinese workers (Habana 2001).

With knowledge of prospective mineral wealth, the United States colonial government supported the efforts of early mining prospectors by creating policies and institutions to gain state control of mineral resources, to the detriment of early Filipino miners. Continuing the building of institutions began by the Spanish colonial administration, the functions of the Inspeccion General de Minas were

passed on to the Mining Bureau, established in 1900 (Lopez 1992; Habana 2001). In 1905, the Mining Bureau became part of the Division of Geology and Mines of the Bureau of Science, signalling the colonial administration's efforts towards modern science and technology development in mining. The Mining Bureau's mandate focused on the disposal and administration of the colony's mineral wealth.

Despite finding areas rich in minerals, the American prospectors did not yet develop mining areas until a law came about that can protect their claims on these minerals (Lopez 1992). The Philippine Bill of 1902, also known as the Organic Act, addressed the concerns of early prospectors. The importance of mineral resources to the American colonisers is apparent in the law, with forty-two out of eighty-eight sections pertaining to minerals (*The Philippine Organic Act* 1902). State ownership of minerals did not follow the Regalian Doctrine in the previous regime when the Spanish Crown had control over minerals underneath public and private lands. The Organic Act adopted a Torrens system of land ownership. The Torrens system allows registration of ownership claim to land property certified by a title. This system strengthens certainty of title to land and to facilitate regulations and transactions involving land. The law allowed mining activities in public lands but not in private ones, giving private owners control over their land and any minerals underneath it. Most of the law's sections on minerals pertain to mineral claims which benefited the early American prospectors seeking security in developing mines. The 1902 mining laws accorded power to the American colonial state and to early American prospectors through mineral claims. Whereas state ownership of minerals was altered from the Spanish regime, the focus on exploiting mineral resources continued through administration and disposal.

The Organic Act limits claim holders to one claim on the same vein or lode (*The Philippine Organic Act* 1902, sec. 33). When a prospector discovers a mineral vein or lode, a claim can be made around the discovery site typically a rectangular area that can measure up to one thousand square feet (1902, sec. 22). Barclay (2003) said that this limit on mining claims made it unattainable for foreign companies to make profitable operations that contributed to the difficulty of attracting investments. Despite this limitation in making mineral claims, early

prospectors nonetheless took advantage of the opportunity to secure mineral lands. Habana (2001) found out that following the enactment of the 1902 mining laws, the 1906 Philippine Commission annual report listed 544 mining claims in the Benguet mining district followed by another 331 in 1908. However, it seemed many claims made were not productive. In July 1904, for example, the governor of Lepanto-Bontoc, part of the Cordillera mountains, reported that out of 150 small claims made, only three or four persisted due to the huge investments required (Barclay 2003).

The colonial miners' committed to dominate nature by extracting minerals from mineral-rich lands even in the face of serious setbacks. Strong typhoons struck the Benguet mining district in 1909 and 1911 and crippled mining operations particularly that of Benguet Consolidated. Colonial miners rose to the challenge. By 1916, for example, Benguet Consolidated was making profits after a successful but challenging rehabilitation that began with attracting investments for technological resources and operations. Like Benguet Consolidated, other Benguet mines recovered as well. The industrialisation of Philippine mining went alongside the gold mining boom that made gold production the third biggest industry in the 1930s. Data compiled by Habana (2001) revealed the steady growth of mining production in peso terms from 1918 to 1928. From 1922 to 1928, gold production made up the majority of total mineral production, from 67 percent up to 92 percent. At the time, at least 60 percent of gold production came from Benguet mines (Habana 2001). In 1929, a sudden increase in production signalled the upcoming boom. As Benguet mines lived up to expectations of steady increase in production, speculative money from domestic and foreign sources poured into Philippine mining companies resulting in the gold mining boom from 1933 to 1936.

The establishment of corporate, financial, and bureaucratic institutions facilitated headways in the industrialisation of mining. These institutions “would bring [Benguet Consolidated] and the Benguet gold mining industry into the future” (Habana 2001, 15–16). Benguet mines such as Benguet Consolidated, Baguio Gold and Itogon-Suyoc that early on adopted corporate structures acquired small mines set up by individual prospectors (Habana 2001). From the 1930s, the

corporate orientation of the mining industry in Benguet became stronger when major industry players transformed their small businesses into modern corporate operations. The corporate formation of major mining companies allowed the expansion of investment through stocks and shares. This had a mutual benefit for gold production and credit expansion. Gold was used to expand credit and, in turn, was invested to gold production (Camba 2015). Gold made up the majority of mineral production during the Philippine mining boom years. Some of the leading gold producers were Benguet's Balatoc Mining, Benguet Consolidated, and Antamok Goldfield. Financial structures allowed investment in mining to grow steadily, peaking during the boom years of the industry. The mining boom and the years leading to it attracted more investments to Philippine mining companies particularly from the United States (Habana 2001; Lopez 1992). The industry's main financial intermediary was the Manila Stock Exchange, organised in 1927, whose stock market transactions consisted mostly of mining shares. In early 1933, the Manila Stock Exchange had six mining stocks out of fifty-two, and rapidly increased to seventy by 1936 (Habana 2001). With the growth of the mining industry in the 1930s, a separate regulating body was needed in the administration and disposition of mineral lands and minerals, and the promotion of the industry. Commonwealth Act No. 136 created the Bureau of Mines in the same year.

The strength of major colonial Benguet gold mines was also apparent when the gold stock price plummeted. When the new mining law was passed in November 1936, the gold share in the Manila Stock Exchange plummeted from its peak in the previous month (Habana 2001). The seeming uncertainty of the fate of the mining industry with the new legislation must have alarmed investors. This affected small mines that struggled to survive the crash. However, major mines like Benguet Consolidated, Itogon and Lepanto, survived the crisis by pooling resources, reorganising workforce, and building up funds (Habana 2001).

#### **4.2.2. Dominating Igorot society**

The American colonial government and colonial miners assumed hierarchical relationships when they persisted in accessing mineral lands even if it meant depriving early Filipino mining communities their traditional access to the same

resources. The success of colonial miners undermined these communities' subscription to the indigenous sustainability discourse, particularly on their communitarian relationships. This meant the loss of self-determination and control over mineral-rich areas that early Filipino miners retained throughout the Spanish colonial period. In Benguet, traditional leaders and custodians of natural resources lost their political, economic, and social status in the community, with dire consequences for Igorot society. Olivia M. Habana (2001, 40) argued that "inasmuch as the elite (*baknang* kingroup) formed the backbone of traditional Igorot society," the loss of power of these leaders "meant a complete reorientation of the Benguet Igorot way of life."

Politically, Igorot mine owners started to get marginalised because the Torrens system disadvantaged the Igorot communities who were accustomed to a different system of natural resource ownership. The ownership of natural resources by clans or individuals is based on community knowledge transmitted orally, and not on titles. Traditional land ownership is a reciprocal system with shared responsibilities for different members of Igorot society, which is different from the Torrens system involving the division of land for individual ownership (Habana 2001). Some *baknang* kin groups registered their properties but many avoided the process. As the United States colonial government advanced in the Cordillera mountains, the prestige and status of the *baknang* was further diminished. *Baknang* leadership role in Igorot society was replaced by colonial administrators and lowlanders. Colonial administrators may have put some members of the *baknang* as *presidente* or townhead, but the actual power belonged to the town secretary who is often a literate non-Igorot from the lowlands who had more accustomed to the ways of the colonial political system (Habana 2001).

Economically, the traditional system was also shaken. *Baknang* clans were further eased out of their productive lands and rich mineral lands, and moved to inhospitable terrains, where mineral extraction was less productive. On top of this, the *baknang* also suffered the loss of available labour when slavery was banned in 1911. As the *baknang* lost ownership and control of mineral resources, so did their capacity to acquire cattle and riceland which are important for food-wage exchange and distribution of wealth. The *baknang*'s loss of access to minerals and

labour meant the degradation of their traditional socio-economic system and its communitarian relationships.

Socially, a somewhat positive outcome of this period was the opening of upward mobility for Igorots outside of the *baknang* class. Education was increasingly replacing class membership as a way to accumulate wealth (Habana 2001). However, resources are necessary to access education and the wealthier *baknang* have more resources than poorer Igorots. The mining corporations provided limited employment benefits to traditional inhabitants of Benguet and other Cordillera areas. They comprised a minority of employees and were often hired in low-skilled and low-waged jobs. During the boom periods in the 1920s and 1930, the estimate is that local hires from the Cordilleras comprised about a third of employees; the rest were mostly lowlander Filipinos and the few executive positions belonged to Americans (Habana 2001). Overall, the strong profitability of the mining industry mostly benefited non-Cordillera inhabitants particularly the colonial miners.

United States colonial miners' assumption of hierarchical relationships undermined early Filipino miners' communitarian relationships. In Benguet, as colonial mining further industrialised, so did the degradation of the foundations of Igorot society.

Within the colonial government, colonial miners also experienced conflict with the nationalist interests of Filipino politicians especially in relation to different conceptions of property. Gold producers created the industry lobby group Gold Mining Association, now the Chamber of Mines of the Philippines, in 1936 mandated to ensure favourable legislation for the sector (Habana 2001). In 1936, the legislation of a new mining law threatened colonial miners' successful mining operations. The new law was preceded in 1935 by the approval of the Philippine Constitution and its inauguration as an American Commonwealth leading the path to the colony's subsequent independence. The 1935 Constitution reverted to the principle of the Regalian doctrine by giving full control over minerals to the state in both public and private lands (Lopez 1992). The following year, Commonwealth Act No. 137, the Mining Act of 1936, reflected the adoption of

the Regalian doctrine and other important changes from the previous mining laws in the Philippine Organic Act of 1902 (Lopez 1992, 68–69). Some of the changes in the laws reflected the protection of Filipino interests. Previously, the Organic Act of 1902 did not differentiate between American and Filipino nationals when it came to having rights over mineral lands; the 1936 Mining Act specified that only Filipino citizens have such rights. The old law did not specify a time period for mining activities, but the new law stated that the maximum concession is 25 years, renewable for the same period. The 1902 law did not have requirements for Filipino capitalisation of mining corporations, but the 1936 law stipulated at least 60 per cent Filipino capitalisation. The old law limited the mineral claim in one vein or lode to one entity, but the new law increased the claims in one vein or lode to three. The Organic Act of 1902 allowed to the alienation of a legitimate mining claim from the corpus of public land, but the 1935 Constitution and 1936 Mining Act clearly prohibited such alienation. These policy changes in mining illustrate the growing nationalistic sentiments in the colony. As the desire of Filipinos for national independence grew, so did their intention of exploiting the colony's natural resources for the benefit of the Filipino people.

The seeming set back in the industrialisation of mining, particularly for colonial miners, was countered by an exemption in the law. Wirkus in 1974 noted that established mining operations were exempted from the new laws at the time. This is a reflection of the power of the newly-established industry lobby group Gold Mining Association (Habana 2001). With their exemption, the major industry players “simply strengthened their ownership rights legally and continued to expand operations, accounting for the continuing upswing in gold production” (Habana 2001, 27). In this regime, while the colonial state accorded some protection to Filipino interests, established mining companies owned by Americans were still able to consolidate their position. United States colonial mining companies retained their position through exemption, which is a testament to the growing power of the industry. In part, this can explain the continued strong performance of major colonial Benguet mines until 1938.

To conclude, United States colonisers and colonial miners subscribed to the Promethean discourse that undermined early Filipino miners and their subscription to the indigenous

sustainability discourse. The domination of the Promethean discourse accompanied the industrialisation of Philippine mining which was not achieved by the Spanish colonisers. The economic highlight of this period was the mining boom of the 1930s. But the end of the mining boom became clear in 1939 when production in Benguet mines went down mainly due to the depletion of ores and fears of the impending war that made land transportation challenging and increased rates of ocean freight (Habana 2001). Just when production quickly picked up in the early 1940s, the beginning of the Pacific war in 1941 halted the upswing in mineral production. The mines were closed and the American control of the industry was never regained (Habana 2001). Mining tools, machines, and infrastructures were destroyed to prevent their use by enemy forces (Lopez 1992). When the Japanese occupied the archipelago from 1942 to 1945, they were able to quickly rebuild some mines in order to supply their raw material needs (Lopez 1992). But overall, the mining industry in the colony was effectively set back by the war.

### **5. Reviving industrial mining after the war and the Promethean discourse (1945-1965)**

When the war ended, the United States granted independence to the Philippines on July 4, 1946. Efforts began to rebuild pre-war industries in the Philippines. The mining industry subscribed to the Promethean discourse as it endeavoured to revive the mining sector. The gold-producing mining giants hardly succeeded in their efforts to bring back their pre-war status while new copper-producing mining companies flourished as they subscribed to the Promethean discourse.

In this section, I engage with the works of Camba (2015) and Lopez (1992) on post-war industrial mining in the Philippines. I focused on these two works because they present opposing views about the revival of industrial mining after the Second World War. On the one hand, Camba (2015) presented the industry only to have reasonable recovery. On the other hand, Lopez (1992) presented the industry to have a sluggish recovery after that war but started to flourish in the 1950s and 1960s. Their different positions are supported by different reasons, an internal one for Camba and an external one for Lopez. Another difference is the scale of analysis. Camba's analysis is largely on the entire industry while Lopez is differentiated and looked at the level of particular mineral sectors.

Camba supported his position with the internal reason that the Philippine state favoured the agricultural sector over the mining sector (2015). His explanation is underpinned by national developmentalism, a political economy approach that views national economies as competitors for high-value-added production and high-paying jobs. National developmentalism can explain Camba's justification that the state favoured the agricultural sector dominated by Filipino elites over the mining sector dominated by American-owned mining giants. Camba (2015) argued that post-war nationalist developmentalism governance hurt the revival of the mining industry. Inspired by the nationalist fervour in the country after its declaration of independence, nationalist developmentalism manifested in protectionist policies that included currency exchange controls and import substitution industrialisation. Camba explained that this negatively affected the mining sector as it "was forced to take a back seat to the more powerful agricultural interest" (2015, 293). By "mining sector," I infer this to mean the American-owned gold producers that accounted for most of mineral production before the war. By "powerful agricultural interest," I infer this to mean the Filipino agricultural elites. Camba (2015) said the national government supported the Filipino elites by keeping the value of the Philippine peso low against the United States dollar to make the export of agricultural produce competitive. After the war, preferential markets between the Philippines and the United States benefited few Philippine exporters, particularly those from the sugar industry (Shalom 1980). Camba's analysis is in line with patron-client interpretation of Philippine politics (Magno 1989; J. C. Scott 1972), where patrons offer resources to clients in exchange for political support (Stokes 2013; Schmidt 1977). In his review of scholarship on post-war Philippine politics, one of Hutchcroft's (1991) observations is that the patron-client relationship was changing after independence. Previously, patrons relied on local resources (usually based on land); after the war, they extended their resource base by exploiting state resources up to the central level through the bureaucracy established by the American colonisers (Hutchcroft 1991).

While I agree that local agricultural elites can have considerable power and influence in Philippine politics, I am not fully convinced that the government's focus on supporting agriculture was the main driver for the slow rehabilitation of the mining industry. Lopez's discussion underpinned by state interventionism regardless of national economies can counter Camba's national developmentalist perspective. Lopez's (1992) findings showed that policies and investments after the war were beneficial to the revival of the mining industry. The

Philippine state provided adequate subsidies to the gold mining sector, including foreign-owned companies, during the difficult recovery after the war (Lopez 1992).

Lopez supported his position of the progressive recovery of industrial mining with an external reason, i.e. the influence of global mineral prices to the initial slow recovery and later flourishing of industrial mining (1992). Compared to Camba's largely general analysis of industrial mining, Lopez offered a differentiated analysis according to mineral sector. Camba's findings on the sector in general is that the industry had modest profits but not comparable to the pre-war mining boom (Camba 2015). Lopez's findings do not counter this. But his differentiated analysis revealed that the gold sector in particular had a sluggish performance while the copper sector grew immensely in the 1950s and 1960s (Lopez 1992). I draw from the findings of Lopez (1992, 213–27) on the history of the Philippine copper boom in the 1950s and 1960s. His discussion is perhaps the only comprehensive work on the topic drawn from primary source documents.

My analysis of the post-war industrial mining largely follows the argument of Lopez. My contribution to his analysis and findings is that, using an environmental discourse approach, I present the epistemic underpinnings of efforts to revive industrial mining after the war. The state and mining industry subscribed to elements of the Promethean discourse as they: 1) recognised or constructed abundant nature, nature as “brute matter”, capital-intensive technology, states, and markets; 2) assumed hierarchical natural relationships; and 3) reinforced Promethean practice. Departing from the standard conception of Promethean discourse, which recognises the market and as the main organiser of resource exploitation, the industry also recognised the state's positive role in promoting mineral exploitation.

## **5.1. Recognising abundant nature and nature as ‘brute matter’; constructing capital-intensive technology, states, and markets.**

### **5.1.1. Abundant nature**

The perceived availability of abundant mineral resources after the war can explain the mining industry's persistence to revive the sector. During the Japanese Occupation, most of the abandoned mines were run-down due to natural disasters, looting, and neglect (Lopez 1992). As such, abundant mineral resources were

once again available for exploitation when the war ended in 1945. However, the road ahead for the mining industry was not easy, particularly for the pre-war gold-producing giants. While gold production lost its glitter as a profitable mineral for the industry, copper emerged as the stellar mineral in this period, particularly in the 1950s and 1960s. Before the war, copper production was not the main source of Philippine mineral industry output and so the copper deposits of the country had been largely untapped.

### **5.1.2. Nature as “brute matter”, capital-intensive technology**

The mining industry and the state realised that to revive the pre-war success in massive extraction of minerals from the earth, it had to rebuild capital-intensive technology and develop or hire personnel with technical knowledge and capacity.

The pre-war gold producers found the acquisition of modern devices and tools challenging with the lack of necessary capital. They found the importation of modern equipment and supplies to be expensive. The use of modern technology was crucial for gold mining after the war because of the depletion of ores. Extracting low grade ores requires advanced technology. With no sufficient investment and high import taxes, the mining industry faced tremendous hurdles. For example, Nestorio Lim, the Secretary of the Chamber of Mines, remarked that by the end of 1949, import controls crippled moves to obtain international mining technology (Camba 2015).

There were some positive developments in technical knowledge and capacity, in terms of technical aid, the human resource development of local engineers, and recruitment of foreign engineers. In the early 1950s, the Bureau of Mines and United States aid agency jointly conducted mineral surveys, provided technical assistance to mining companies, and establishing the University of the Philippines mining school (Lopez 1992). Also, a proposed legislation that restricted the recruitment of American technical experts was not passed and, thus, allowed the employment of American staff by mining companies (Lopez 1992).

In contrast to gold producers, copper producers had sufficient capital to build mining that allowed maintaining expert staff needed for the technical requirements of copper extraction. Large investments poured in due to strong markets. These investments were crucial because most Philippine copper mines had low-grade ores and their extraction required capital-intensive mine development, including mechanical technology. Because of the huge capital requirements, the copper boom was dominated by a few large mining corporations and a handful of smaller companies. This is in contrast to the gold mining boom before the war when gold producers who took part in the gold rush were many and diverse, ranging from individual gold panners to gold mining giants. The relationship between capital requirements and copper mine development, including technology, was specified by Lopez in this way:

The commercial exploitation of copper ore-bodies, often found in underdeveloped areas of the country, requires enormous expenditure for prospecting and exploration, development, and other preparatory work. It takes up several years to construct expensive crushing and concentrating plants, purchase power shovels, giant dump trucks, etc., and build access roads, ports, and other infrastructures. The returns are high but so are the risks; such an enterprise in which only companies with large capital resources have a chance of success and only if they perform efficiently and are assured of stable markets. (1992, 216)

### **5.1.3. The state**

The mining industry, especially gold producers, recognised the role of the state through policy and program interventions in the rehabilitation efforts of the mining industry. First, the post-war trade policies accepted by the Philippine state were beneficial to the mining industry. Minerals from the Philippines can enter the United States without quota and tariff. The trade policy allowed investments from the United States. Second, in response the lobbying efforts of gold producers, the state enacted subsidy laws for gold producers for nine years in the 1950s and 1960s.

*Pro-mining trade policies.* After the war, the United States Congress passed the Bell Trade Act of 1946 with 20-year trade provisions between the two countries; the law was accepted by the Philippine Congress just two days before the declaration of its independence. The tariff scheme is reciprocal with no tariffs for the first eight years; however, quotas were imposed only for the entry of some Philippine goods to the United States and but not for United States good entering the Philippines (Cuaderno 1952). The law also provided parity rights to United States citizens to exploit the archipelago's natural resources similar to that of Philippine nationals. For the American-owned gold producers in the Philippines that dominated the pre-war Philippine mining industry, provisions on preferential market access and parity rights can be beneficial to the sale of minerals and the revival of the mining industry. The law allowed unlimited amount of Philippine minerals to enter the United States without tariff, whereas quotas were imposed on some agricultural goods (Golay 1955). This means mineral producers were in a better position than agricultural producers. Also, parity rights allowed investments from the United States towards American-owned gold producers. The trade act guaranteed USD 800 million of rehabilitation funds to the Philippines, some of which went to the revival of pre-war industries like mining (Lopez 1992). In fact, large post-war investments were given to commerce and real estate, and the rehabilitation of pre-war industries (like mining) and not in increasing production in agriculture and industry (Cuaderno 1952).

*Gold subsidy laws.* During this period, the mining industry reinforced Promethean practice through lobbying and legislation. The industry association responded to the dire situation of gold producers by putting serious efforts in pushing for gold producers' interests. The association supported gold producers and was successful in lobbying for favourable policies that saved the gold mining industry but not enough to bring it back to its pre-war glory. In 1949, the Chamber of Mines of the Philippines was revived. Originally formed in 1936 as the Gold Mining Association, the revived industry lobby group was composed of mining corporations, in the production and pre-production stage of operations, and individuals, such as engineers, and company officials and staff (Lopez 1992). The Chamber was largely successful in pursuing the interests of the

industry. Its lobbying efforts resulted in laws that favoured the mining industry and the prevention or modification of policies that could hurt the industry. It lobbied for the legislation of gold subsidy laws that were implemented from 1954 to 1957 and from 1961 to 1967 that saved the industry at the time (Lopez 1992). In a 1953 case presentation in Congress, the Chamber gained the sympathy of some lawmakers when it propositioned that the impending demise of the gold mining industry would result in thousands of job losses, millions of pesos lost in government revenue, and the expensive delay of mine development (Lopez 1992). The Chamber also supported the legislation that became Republic Act. No. 406 creating a mines special fund in the Bureau of Mines sourced from ten per cent of the total mining taxes collected by the government. Enacted in 1949, RA 406 stipulates that the fund shall be used for government-led research on mineral deposits and the publication and dissemination of results and other mining-related information (*RA 406* 1949).

#### **5.1.4. Markets**

Markets played a role in the revival of industrial mining. The low price of gold was a main contributor to the slow recovery of the gold production sector after the war. Lopez (1992) noted that the price of gold remained the same while the cost of production had been increasing. For example, after the war until 1953, gold prices were just marginally higher than the cost of production (Lopez 1992), making gold less profitable. The price of gold was not accounted for in Camba's (2015) analysis because he did not look into the post-war recovery of individual mineral sectors. Lopez (1992), however, examined individual mineral sectors and found out that copper producers flourished in the 1950s and 1960s, as gold producers and other metallic producers were languishing. This means that Camba's argument that nationalist developmentalism and the government's priority given to agriculture hurt the mining industry is debatable because copper production prospered in this period.

Investors found Philippine copper mining attractive due to strong markets. This happened due to a high demand and low supply. The post-war reconstruction and rapid development of Japan and Western Europe from the 1940s to the 1960s increased the demand for copper. Also, the armed conflict in Asia from the 1950s propelled the high demand for copper. In terms of supply, the instability in copper-producing countries from Africa and South America contributed to a global shortage that opened an opportunity for Philippine copper mines. As the increased demand pushed world copper prices up, investors were encouraged to pour funds into viable copper-producing mines in the Philippines given the highly profitable copper market.

## **5.2. Assuming hierarchical natural relationships.**

The mining industry and the state assumed hierarchical relationships when they persevered to dominate nature, i.e. exploit abundant mineral resources, with the industry's rebuilding efforts. The mining industry pushed on with rebuilding efforts even with slow progress. The aftermath of the war left a very challenging rebuilding work for the mining industry, particularly for the major American-owned gold producers who dominated mineral production during the boom period from 1933 to 1936. The 1952 Philippine Mining Yearbook recorded that the mining industry suffered an estimated eighty percent damage to its pre-war investment, the highest among all industries, followed by fifty-seven percent for livestock and forty-three percent each for fishery and lumber (Lopez 1992, 184). In a 1945 reflection by Joseph S. Peterson, chief of staff of Balatoc Mining and Benguet Consolidated, top gold producers of the country, he wrote:

The destruction in camp is very complete.... This will be the toughest job that any of us ever tackled, mainly because of the shortage of everything and the stone wall defense keeping us from the things we need. Think of dragging logs for the drain tunnel from the tops of the ridge by hand and waiting days for transportation for any little thing, no power, very limited living quarters for men and staff, inflation prices for everything. But we are going to bear this thing and the first big step will be when we get our first truck." (Lopez 1992, 184).

Despite gold producers' efforts at rebuilding their operations, they were hardly successful in this endeavour. Although some mining companies that immediately rehabilitated their mines were gaining ground, the overall revival of the industry was excruciatingly sluggish. Six years since the recovery work started, mining adviser William Tamplin opined in a 1950 survey report that "the gold mining industry (which was the major pre-war mineral producer) contrasts sharply with its pre-war status in 1941" and pointing out that "gold mining operations have attained only about 35% of their 1941 production levels" (Lopez 1992, 189). Employment figures reveal the extent of the industry's hardships. The report said that by 1950, there were only 19,006 mine workers, not even half of the 44,276 pre-war figures (Lopez 1992, 190).

Further, the worsening peace and order situation in the country hampered investments and expansion. The peasant rebellion in the countryside, including some mining areas, worried investors and contributed to the lack of capital badly needed for industry recovery (Lopez 1992). This rebellion called *Hukbong Mapagpalaya ng Bayan* (People's Liberation Army) or *Huks* began during the Japanese Occupation in 1942 and continued until 1954 (Kerkvliet 1977). The communist movement formed in the 1930s joined the Huks during the war and continued their insurgency until the early 1960s (Saulo 2002). Investors were reluctant because of the precarious situation in mining areas affected by the insurgency.

The performance of copper producers was stronger after the war. They succeeded by taking on the big task of building mining towns that were needed to support huge operation. Lopez described the development of mining towns as such:

Because of their complex operations, the relative distance of the mine sites from urban centres, and the need to maintain a well-trained and motivated workforce, the various mining companies literally have to carve out mining communities enjoying the basic amenities, such as housing, running water, medical services, and recreational facilities. In the case of the big mining companies that employ thousands of workers and which have a 20-year or longer work horizon for the exploitation of their mines, such communities develop into veritable towns. (1992, 224)

New industrial mining companies were able to thrive through copper mining, such as Atlas Consolidated, Marinduque Mining, Philex Mining, and Marcopper Mining. Lepanto Consolidated in Benguet, one of the American-owned pre-war mining giants, remained profitable because of its copper production.

## **6. Chapter conclusion**

The environmental discourse findings complement some political economy and geopolitical explanations of the development of Philippine mining in the colonial and post-independence periods by highlighting the environmental dimensions of these previous studies. The chapter also showed a contribution to Dryzek's (2013) elements of the Promethean discourse. The major elements of the Promethean discourse were present in the empirical analysis, but the discourse closely interacted with Philippine state intervention, which is not a usual feature of the discourse.

When the Spanish colonisers arrived in the Philippines, they saw opportunities in mineral extraction and followed non-industrial cornucopia. This threatened the mining practices of indigenous societies who were following the indigenous sustainability discourse. The United States colonisers and colonial miners followed the Promethean discourse that undermined the early Filipino miners' subscription to the indigenous sustainability discourse. This resulted in the degradation of these indigenous societies' traditional systems. After the Second World War and the independence of the colony, the Philippine state and the mining industry continued to follow the Promethean discourse. In the next chapter, however, environmental concerns will introduce new discourses in Philippine mining that will challenge the dominance of the Promethean discourse.



## Chapter 4

### Environmental concerns permeate Philippine policies (1965-1992)

In the 1970s, the Philippine state accepted discourses in policies that acknowledged limits to natural resources stocks, in contrast to previous environment-related policies that focused on the exploitation of natural resources, without much consideration of depletion or environmental impact. The dictatorial regime (1965-1986) of President Ferdinand Marcos, Sr. is notorious for its corruption and human rights abuses (Aquino 1999) but it is also known for introducing policies addressing environmental issues. Apart from a pollution control law enacted in 1964 before his term as president, it was the Marcos administration that first introduced pieces of legislation that address environmental concerns. Previously, environment-related laws focused on the administration and exploitation of natural resources like minerals, forests, and lands. In 1974, Marcos decreed a policy that featured elements of the limits discourse. The limits discourse espouses the idea that resources are finite and so sees the need for seriously halting the insatiable desire for economic growth through excessive production and consumption. However, at the same time, he decreed a new mining law that featured elements of the Promethean discourse. This tension between the Promethean discourse and the limits discourse was relieved by the administrative rationalism discourse introduced in policy statements in the late 1970s. In 1977, new environmental laws that featured elements of environmental-problem solving discourses, particularly administrative rationalism. But the political economic realities during the Marcos regime can provide new insights in the analysis of the Promethean discourse and administrative rationalism in Philippine policies. **I argue that the Promethean discourse was consistent with state intervention and crony capitalism that corrupted administrative rationalism.** When the Marcos regime ended in 1986, the succeeding administration under President Corazon Aquino continued the legislation of policies that featured elements of the administrative rationalism discourse.

Most of the policies discussed in this chapter concern environment issues in general. However, they are relevant for this study because these policies often apply to industrial mining operations. Each of the policy documents analysed in this chapter may have elements

of different environmental discourses, but in most cases, I focused on the dominant environmental discourse expressed in the policy document.

This chapter adds an environmental dimension to political economy analysis of Philippine politics that can affect the mining sector. It also modifies Dryzek's (2013) analysis of the Promethean discourse and administrative rationalism. The Promethean discourse was consistent with state intervention and crony capitalism which are not considered in the standard accounts of the Promethean discourse. Political and economic interests, i.e. state intervention and crony capitalism, corrupted administrative rationalism.

### **1. Overview of environmental policies and a new mining policy, findings of political economy scholarship**

Aside from a pollution control law enacted in 1964 during the administration of President Diosdado P. Macapagal (1961-1965), the Marcos administration was the first to introduce landmark environmental policies in the country. Previous laws were focused on the management and use of natural resources with little concern for environmental consequences.

On May 17, 1974, Marcos issued Presidential Decree No. 461 (PD 461), *Reorganizing the Department of Agriculture and Natural Resources into two departments, namely: Department of Agriculture and Department of Natural Resources*. While it is mainly a reorganizational directive, the law expresses concern for the growing demand for natural resources, and the need to conserve, rehabilitate, and manage natural resources for the benefit of current and future generations. However, the goals of PD 461 counter the goals of a new mining law issued by Marcos on the same day.

Marcos declared a new mining law that reiterated the same massive extraction goals of previous laws. Presidential Decree No. 463 (PD 463), the Mineral Resources Development Decree of 1974, replaced the 1936 American colonial mining policy. The main goal of the new mining policy is to exploit mineral resources by modernising the industry for national economic development. This policy can be understood in light of political economy explanations of mining outcomes during the Marcos regime. Lopez (1992) showed that Marcos and his cronies gained control of major mining companies. The corrupt practices of the Marcos regime were not limited to the mining sector. More broadly, Aquino (1999) described the practices of

the regime as the “politics of plunder”. The Marcos administration pillaged the resources and wealth of the country for personal benefit. Moreover, Kang (2002) and Manapat (1991) presented the Marcos regime with crony capitalist features. Crony capitalism is a system that favoured the friends and family of Marcos to amass wealth by obtaining favours from the government. These political economic realities can explain why the Marcos regime would promote the modernisation of mining as stipulated in PD 463: the mining industry’s growth could benefit Marcos and his cronies. In this regard, the new mining law was consistent with the corrupt practices of the Marcos regime countered the environmental objectives of PD 461.

A few years later, the Marcos regime responded to this tension between PD 461 and PD 463 by enacting the foundational environmental law (*Philippine Environmental Policy* 1977), and other laws that provide tools for addressing environmental problems, including those due to mining activities. These tools include setting environmental standards (*Philippine Environmental Code* 1977), environmental impact assessment (*Philippine Environmental Policy* 1977; *Presidential Decree No. 1586* 1978), and pollution control (*Pollution Control Law* 1976). These environmental policies address the tension between the objectives of PD 461 and PD 463, but there are also political economy explanations for why the Marcos regime introduced these laws and why their implementation was constrained. The findings of Tadem (2013) showed that technocrats, who are central in the implementation of these environmental laws, were constrained by the interests of Marcos and his cronies. Tadem (2013) also argued that the Marcos regime put in place technocrats in government in its desire to secure foreign loans that can be facilitated by technocratic governance.

Below, I add an environmental dimension to political economy explanations for environmental policies and the new mining policy using the features of environmental discourses.

## **2. Limits discourse**

A discursive shift in environment-related policies began in the 1970s, under the regime of President Ferdinand Marcos. Previously, environment-related laws in the Philippines focused on regulating or promoting the use of natural resource use like minerals, forests, and lands. As social movements around the world pressure governments and international bodies to the address the environmental impacts of human activities, environmental concerns were included in policies. In the Philippines, Marcos issued Presidential Decree No. 461 (PD 461) on May

17, 1974 with features of the limits discourse. Popularised by the Club of Rome, the limits discourse was considered radical at the time of its introduction. Based on predictive computer models and system dynamics theory, a team of seventeen experts concluded in 1972 that, given that historical growth remains constant, limits to growth will be palpable by 2072, with serious constraints on population and industrial growth (Meadows et al. 1972).

PD 461 is also known as *Reorganizing the Department of Agriculture and Natural Resources into two departments, namely: Department of Agriculture and Department of Natural Resources*. The decree acknowledged that agricultural development and natural resource management are two broad and complex programs, with each program needing a separate department. Most of the objectives of PD 461 echoed the elements of the limits discourse. The decree expressed or implied these elements of the limits discourse: 1) the recognition or construction of finite resources, populations, and elites; and 2) assuming conflict and hierarchy as natural relationships. These elements were expressed in key words and phrases (emphasis mine) of the decree's objectives (*Presidential Decree No. 461 1974*, paras. 1–6):

WHEREAS, it is a primary objective of the Government to conserve, revitalize and develop the country's national wealth and manage its utilization for the continued well-being of present and future generations;

WHEREAS, *progressively increasing demands* for food, agricultural raw materials, mineral, aquatic, and forest products, are being felt throughout the world and predicted to intensify in the immediate future;

WHEREAS, within the Philippines itself, the demands of a *growing population* exert *tremendous pressure* on the country's existing food and natural resources;

WHEREAS, in the light of *growing domestic and world demands* for basic commodities, there is a *pressing need to continuously assess* the status of all existing food and natural resources of the Philippines with the view to maximizing their possible, providing (sic) for their replacement;

WHEREAS, the development of agriculture and the management of natural resources involve *two separate broad and complex programs* which are presently being planned and implemented by only one organization; and

WHEREAS, the attainment as soon as possible of the *national goal* of increased production and self-sufficiency in basic foods and the *completion of an updated inventory and assessment* of the nation's natural resources for the purpose of *ensuring conservation, optimal utilization, programmed exploitation and replacement* whenever possible, can best be achieved if these objectives are prosecuted by two separate departments.

## **2.1. Recognising finite resources; constructing populations and elites**

### **2.1.1 Finite resources**

The policy implied increasing pressure on natural resources with warnings on the “progressively increasing demands,” “growing domestic and world demands,” and “tremendous pressure” on natural resources by a growing populace (*Presidential Decree No. 461 1974*, paras. 2–4). If resources were infinite, as the cornucopian and Promethean discourses assumed, such pressure would not need recognising, or could easily be relieved. The worry about pressure only makes sense in the context of an essentially finite stock of natural resources

### **2.1.2. Populations**

The decree explicitly acknowledged populations (whose total size is an object of concern) in its objectives. The policy conceived populations in a seemingly collective sense, positioned under state authority and relevant to “national goals” in resource management (*Presidential Decree No. 461 1974*, para. 6).

### **2.1.3. Elites**

Consistent with the way the limits discourse saw political authority around the world in the 1970s, the decree vested power in elites, i.e. national state authorities and experts. The decree expanded state authority with the creation of a separate national department for natural resources. State authority is anchored on experts, like in areas of systems modelling and ecology, who play important roles in the “completion of an updated inventory and assessment” of natural resources towards “ensuring conservation, optimal utilization, programmed exploitation and replacement” of natural resources (*Presidential Decree No. 461 1974*, para. 6). The decree mentioned the inclusion of computing expertise among the personnel of the natural resources department (*Presidential Decree No. 461 1974*, sec. 9).

### **2.2. Assuming conflictual and hierarchical natural relationships**

The policy also assumed a hierarchical relationship with national state authorities directing populations on natural resource use. The decree enlarged state authority with the creation of two national departments, one each for agriculture and natural resources, because they are “two separate broad and complex programs” (*Presidential Decree No. 461 1974*, para. 5). This signalled greater state control over natural resources. State control conscripts experts with the capacity to fulfill the “pressing need to continuously assess” the status of natural resources (*Presidential Decree No. 461 1974*, 4).

The timing of the articulation of elements of the limits discourse in Philippine policies is not surprising. These ideas were influenced by the global discourse that drew on environmental concepts introduced in the Limits to Growth report (Meadows et al. 1972) and in the 1972 Stockholm Declaration of the UN Conference on the Human Environment. Both texts came out just a few years before PD 461 was issued. In a 1977 speech, Marcos (1977, par 4) himself acknowledged that the worldwide attention to the environment “has followed the historic Stockholm Declaration in 1972 which for the first time noted the pervasive decay of the human environment and asserted the fundamental right of man to live in an environment worthy of his dignity and well-being.”

While key concepts of the limits discourse appeared in Philippine policy statements, there appears to be no evidence that the government adopted anti-growth prescriptions or programs. During the conference leading to the 1972 declaration, developing countries criticised the anti-growth prescriptions that can curtail their development needs (Dryzek 2013). While the limits discourse may not have any clear practical impact on environmental and natural resource governance at the time, the permeation of limits discourse elements in Philippine policy does signal some challenge to the domination of the Promethean discourse.

### **3. New mining law and the reiteration of the Promethean discourse**

On the same day when PDI 461 was issued, another policy was declared that counters the limits discourse. Presidential Decree No. 463 (PD 463), also known as the Mineral Resources Development Decree of 1974, replaced the almost four-decade mining policy enacted by the American colonisers in 1936. State-led mining was part of Marcos's economic agenda that was common in the developing world at the time. Developing countries entered into a pattern of acquiring cheap loans, building industries, exporting goods to the global market, and paying back loans swiftly (Camba 2015). PD 463 promoted the advancement of industrial mining which was favourable to Marcos and his cronies, in so far as they found ways of controlling large mining corporations. Marcos's state-led development regime may have favoured domestic mining firms (Camba 2015; Lopez 1992), but PD 463 reiterated Promethean thinking in mining. The decree featured elements of the Promethean discourse: 1) the recognition or construction of abundant nature, nature as "brute matter," and capital-intensive technology; and the 2) assumption of hierarchical natural relationships. Departing from the standard accounts of the Promethean discourse, which recognises the market and as the main organiser of resource exploitation, the decree also recognised a positive role for the state in promoting mineral exploitation. Some of these elements were expressed in some key word and phrases (*italics mine*) in the assumptions of the law (*Mineral Resources Development Decree 1974, par 2-3*):

WHEREAS, *mineral production is a major support of the national economy*, and therefore the intensified discovery, exploration, development and wise utilization of the country's mineral resources are urgently needed for national development.

WHEREAS, the *existence of large undeveloped mineral areas* and the proliferation of *small mining claims deter modern development of the country's mineral resources* and urgently require well-planned exploration, development and systematic exploitation of mineral lands to accelerate production and to bolster the national economy.

WHEREAS, effective and continuous *mining operations require considerable outlays of capital and resources*, and make it imperative that *persons possessing the financial resources and technical skills for modern exploratory and development techniques* be encouraged to undertake the exploration, development and exploitation of our mineral resources.

### **3.1 Recognising abundant nature; constructing nature as “brute matter,” capital-intensive technology, and the state.**

#### **3.1.1. Abundant nature**

The new mining policy was based on a theory of natural resource abundance. The policy recognised “the existence of large undeveloped mineral areas” at the time (*Mineral Resources Development Decree 1974*, para. 2).

#### **3.1.2. Nature as “brute matter,” capital-intensive technology**

The policy recognised that the accelerated transformation of minerals from “brute matter” into profitable products can be achieved using capital-intensive technology. PD 463 primarily aimed to provide for a “modernized system of administration and disposition of mineral lands and to promote and encourage the development and exploitation of mineral resources” (*Mineral Resources Development Decree 1974*, title). The modernisation goal is one of the features of the policy that made it distinct from the previous 1936 colonial mining policy. Part of this modernisation goal is the growth of the industry that “require(s) considerable outlay of capital and resources,” and supporting “persons possessing the financial resources and technical skills for modern exploratory and

development technique” to accelerate mineral resource extraction (*Mineral Resources Development Decree 1974*, para. 4).

### **3.1.3 The State**

The policy strengthened the role of the state in promoting the mining industry. In this decree, the state is actively supporting the industry in general ways. But in particular, the state intervened through tax exemptions (*Mineral Resources Development Decree 1974*, sec. 53). These exemptions applied to custom duties and all taxes of imported equipment and supplies for old and new mines, during the exploration period up to five years from the start of actual commercial production. For the same period, mining claims, mining area improvements, and mineral products are also tax exempted. This role for the state was more active than Promethean discourse would normally suggest, but is more consistent with that discourse in reducing taxation in order to make operations easier for profit-making enterprises.

## **3.2. Assuming hierarchical natural relationships**

The policy set out the domination of mineral resources and existing rights holders by the state and industrial miners for human economic development. The policy expressed this by asserting mining-based national development, declaring state ownership of mineral resources in public and private territories, and supporting industrial mining developers.

### **3.2.1. Mining-based national development**

The overall rationale of the policy demonstrated the state’s assumption that humans and their economic development dominate nature. One of the policy’s main assumptions is that “mineral production is a major support of the national economy,” and that the expedient acceleration of mineral extraction and production is imperative for national development (*Mineral Resources Development Decree 1974*, para. 1). The mining-based national development strategy was of high importance. The policy’s modernisation goal through capital-

intensive technology was supposed to support this development objective. Areas already reserved for purposes other than mining may be reclassified for mining development if the area were found to be more valuable for its mineral deposits (*Mineral Resources Development Decree 1974*, sec. 8). In 1978, Presidential Decree No. 1305 (PD 1305) reinforced the mining law's development paradigm. PD 1305 created the Mineral Reservations Development Board to oversee the development of mineral reservations at the national level. Among other tasks, the board is mandated to "initiate and promote studies and research on mineral management, financing, marketing, and technology for mineral reservations" (*Presidential Decree No. 1305 1978*, s 3c).

### **3.2.2. State ownership of mineral resources**

The policy demonstrated human domination of mineral resources and existing rights holders with the state's near absolute control and disposal of all areas, whether public or private, that may be more valuable for its mineral content than its existing purpose. So the discourse was very much a statist Promethean one. The policy reiterated the Regalian Doctrine of the Spanish colonial era when Spanish colonisers declared that all public land of the archipelago belonged to the Spanish Crown. PD 463 claimed state ownership of mineral deposits in public and private areas of the Philippine territory (*Mineral Resources Development Decree 1974*, sec. 3). In cases where private owners deny permission to mining prospectors or developers from operating in their private land, designated state officials may act in favour of mine developers through mediation or the court (*Mineral Resources Development Decree 1974*, 12). Upon the request of the interested parties, i.e. mine developers, state officials may mediate between private owners and mine developers. If the mediation fails, the mine developer may file a case in court requesting permission to enter and operate in the private owner's land. Should the court rule in favour of the interested party, the court shall assign the compensation or rental fee due to the private landowner.

### 3.2.3. Supporting industrial mining developers

The policy showed human domination of nature as the state supported industrial mining developers who are instrumental in modernising and accelerating mineral production. Towards. PD 463 expressed this by: favouring industrial mining developers over small-scale miners and bestowing auxiliary rights to industrial mining developers.

*Industrial miners over small-scale miners.* PD 463 made it clear that “small mining claims deter modern development of the country's mineral resources.” This supported the case for favouring industrial miners and their financial and technical capacity to modernise mining for national development. The new mining law was supposed to overcome some of the weaknesses of the old law (colonial mining policy) that hindered the potential of the mining industry to develop and flourish. One of the issues with the old law was on genuine claims development. The state's Board of Investments said the old law “permits claim holders, without technical and financial resources to sit on their claims, presumably for speculative purposes, taking advantages of the laxity of the legal requirements to hold on to their claims” (Lopez 1992, 279). PD 463 addressed this by setting higher location fees and required annual expenses for active development of claims (Lopez 1992), which were expected to deter potential claimants who were simply intending to sit on their claims. In the process, the new law also hindered small claim holders who may have fewer financial resources but still have the intent to develop their claims.

*Auxiliary mining rights.* The policy accorded auxiliary rights to the mining claimant, for example in the disposal of timber, water, or any area that can facilitate mine development (*Mineral Resources Development Decree* 1974, secs. 56–59). In cases where existing parties own, occupy, or lease such areas, and deny or dispute the mine developer's auxiliary rights, designated state officials may mediate, or the mine claimant or owner or lessee may file a case in court.

Overall, the new law featured elements of the Promethean discourse, though in very statist form. PD 463 intended to accelerate the extraction of abundant mineral resources for the state-

led modernisation and growth of the mining industry through capital-intensive technology. The policy assumed the domination of humans over nature by relying on mineral resources for national development, declaring state ownership of mineral resources, and supporting industrial mining developers. The new law perpetuated a kind of capitalism that bolstered big business. This is an outcome of the new law's hefty fees and technically demanding requirements that were meant to weed out claim holders who only intend to invest and not develop their claims (Lopez 1992). But the policy also disadvantaged genuine small claim holders with few financial resources.

Features of the Promethean discourse underlying the new mining law were consistent with the regime's alleged corrupt practices. The Marcos regime's modernisation of the mining industry, particularly in mineral processing (Lopez 1992) favoured the "politics of plunder" (Aquino 1999). The findings of Aquino (1999) revealed that the Marcos regime pillaged the nation's wealth, often generated from the exploitation of natural resources including minerals. A primary way that the regime accomplished this was by establishing a crony capitalist system. The friends and relatives of Marcos were given special favours by government to accumulate wealth and economic power (Kang 2002; Manapat 1991). As Marcos and his cronies gained control of major mining companies (Lopez 1992), so did they reap benefits from the modernisation of the mining industry.

#### **4. Administrative rationalism relieved policy tensions**

The simultaneous enactment of PD 461 and PD 463 introduced a tension in mineral resource governance between the elements of the limits discourse and the Promethean discourse. The two policies are grounded on opposing recognitions or constructions of nature: PD 461 recognised or constructed finite natural resources and PD 463, the abundance of natural resources. Like in other countries, the Philippine state responded to this tension with the environmental problem-solving discourse. Some of the variants of this discourse put solutions in the hands of administrators or bureaucrats (administrative rationalism), citizens (democratic pragmatism), or markets (economic rationalism) (Dryzek 2013). The discourse offers a more optimistic outlook into environmental futures in response to the gloomy perspective of the limits discourse, at least in the sense that the question of limits fades into the background, with a focus instead on practical problem solving. In doing so, environmentally detrimental economic activities, like mining, no longer have to be drastically

curtailed. Marcos expressed this positive outlook in his address at the 1977 National Conference on Environmental Management (1977, paras. 5–8):

We have grown, I think, not only in our anxiety about the (environmental) problems; more important, we have grown in our understanding of them, and in our capacity to cope with them and to resolve them.

One measure of the change that has taken place is the spirit in which we respond to the so-called environmental crisis. At the time of the historic Stockholm Conference, it was fashionable to speak of the crisis as the inevitable result of a world gone berserk with technology and industry, and portents were everywhere sounded in advanced countries that progress had made of the earth a vast wasteland.

After five years, we know a little bit better than this. The decay of the global environment affects all the nations in common....

And side by side with this perception, we now experience after five years a considerably more optimistic outlook about the situation to match the doomsday proclamations that greeted the crisis of the Sixties.

His optimism was followed by a reference to the language of the environmental problem-solving discourse. Marcos (1977) said that the tension between industrial development and environmental harm is manageable and controllable. Towards the end of his speech, he announced the enactment of two landmark environmental decrees on the same day: The Philippine Environmental Policy or Presidential Decree No. 1151 (PD 1151) and the Philippine Environment Code or Presidential Decree No. 1152 (PD 1152) (Marcos 1977). These policies, along with others in this period, subscribe to administrative rationalism, a specific type of environmental problem-solving discourse. Administrative rationalism espouses the idea that environmental problems can be solved by bureaucrats who deploy and organise technical knowledge for their decisions (Dryzek 2013).

Administrative rationalism is consistent with the technocratic aspect of the Marcos regime. Technocratic governance is based on technical and managerial expertise and knowledge, similar to administrative rationalism. John Dewey took notice of technocracy as early as the 1920s with the rise of the industrial society that is becoming reliant on expert knowledge (Fischer 2000). Dewey was cautious of technocracy because of its elitist tendency that could

thwart meaningful citizen participation in political decision-making (Fischer 2000). Tadem (2013) described most Philippine technocrats as having educational training in engineering and business. Before the declaration of Martial Law in 1972, the Marcos administration had successfully laid down the foundations of technocracy. The Philippine political economy technocrats at the time subscribed to the economic liberal agenda of the World Bank (WB) and the International Monetary Fund (IMF). This facilitated the Marcos administration's desire to secure foreign loans (Tadem 2013), an instrumental motive for instituting technocracy.

Administrative rationalism that applies to government is ideally devoid of politics and allows experts and bureaucrats shape environmental decisions (Dryzek 2013). This view is often espoused by governments. However, administrative rationalism can be corrupted by political and financial interests. This can happen with pro-mining governments, or when governments bestow the production of expert knowledge to corporations, like in the Philippine Environmental Impact Statement System (Bravante and Holden 2009). Pro-mining governments and mining corporations can manipulate the production of expert knowledge to legitimise mining activities. Kirsch (2014) exemplified this in mining by showing how the scientific practices of mining companies are systematically biased. His case study showed that the owners of Ok Tedi mine only acknowledged the favourable environmental outcomes of the mining activities and that Ok Tedi mine and other mining companies deliberately delay acknowledgement or hide evidence of negative environmental consequences.

In Philippine mining, administrative rationalism was susceptible to the corrupt political economic practices of the Marcos regime. Philippine technocrats under the Marcos regime were not left alone to run the show. Technocracy, the military, and Marcos's cronies formed the Martial Law triad under Marcos (Tadem 2013). As the longest sitting President of the country from 1965 to 1986, Marcos's leadership was marred by many controversies, like authoritarianism, human rights violations, and corruption. In Philippine politics during the Marcos regime, technocracy was constrained by the interests of the cronies of Marcos (Tadem 2013).

Philippine policies established some administrative rationalism practices, like environmental impact assessment (EIA) and pollution control. Marcos enacted The National Pollution Control Decree of 1976 or Presidential Decree No. 984 (PD 984). The decree reorganised the

National Pollution Control Commission to strengthen the protection of the Filipino people from environmental pollution. The following year, PD 1151 established EIA in the country by requiring an Environmental Impact Statement (EIS), or environmental reports, before projects and other activities that may have considerable impact on the environment could commence (*Philippine Environmental Policy* 1977). PD 1152 set the management policies and environmental standards. The following year, in 1978, EIA practice was strengthened when Marcos issued the Philippine Environmental Impact Statement System (PEISS) or Presidential Decree No. 1586 (PD 1586). This decree mandated the designated agency that will create the regulatory requirements for EIS compliance and conduct EIS review for an ‘environmentally critical project’ (*Presidential Decree No. 1586* 1978). In 1981, Marcos issued Presidential Proclamation No. 2146 that listed large-scale mining as one of the ‘environmentally critical projects’ subjected to an EIS requirement. EIA has various meanings and scope. Gilpin’s definition covers some of these meanings and a range of EIA activities: “The official appraisal of the likely effects of a proposed policy, program, or project on the environment; alternatives to the proposal; and measures to be adopted to protect the environment. The concept might apply from inception to operation, but might embrace post-project-analysis” (Gilpin 1995, 4–5).

The Philippines was one among many countries that followed the lead of the United States in EIA policy-making (Gilpin 1995). PD 1151, the foundational Philippine environmental law, was patterned after the United States National Environmental Policy Act (NEPA) of 1969 (Ingelson, Holden, and Bravante 2009). Following the enactment in the United States of the wilderness and clean air laws in the early 1960s, the NEPA institutionalised EIA in the country (Bartlett and Kurian 1999; Gilpin 1995). These policies created institutions and practices that established administrative rationalism in the United States. EIA in the United States also includes forms of the democratic pragmatism discourse, such as public review and comment, that espouses that environmental problems are complex and need to be solved using a flexible approach involving different knowledges and voices. But largely, the EIA process is arranged based on features of administrative rationalism.

Philippine environmental policies during this period featured elements of the administrative rationalism discourse: 1) the recognition or construction of the administrative state and experts, and 2) the assumption of two kinds of hierarchical natural relationships—the state’s

subordination of its people, and the dominant position of administrators and experts within the state.

#### **4.1. Constructing the administrative state and experts.**

##### **3.1.1. Administrative state**

Administrative rationalism can be recognised in specific bureaucratic institutions, like natural resource management public agencies, pollution control agencies, and advisory councils (Dryzek 2013). Some of the Philippine environmental policies established new bureaucratic institutions or reorganised and strengthened existing ones. For example, PD 984, the revised Pollution Control Law, reorganised the bureaucratic apparatus addressing environmental pollution. Aside from a full-time Commissioner and two full-time Deputy Commissioners, the National Pollution Control Commission's (NPCC) attached advisory council shall be composed of representatives from over ten departments with varied jurisdictions (*Pollution Control Law* 1976). The Commission is mainly divided into units dedicated to water pollution, air pollution, research and development, legal matters, and administration. Marcos's technocratic regime set up institutions like the Department of Natural Resources (DNR) in 1974, the National Pollution Control Commission (NPCC) in 1976, the NPCC-attached Inter-Agency Advisory Council in 1976, and the National Environmental Protection Council (NEPC) in 1977. The DNR became the umbrella agency for line bureaus and attached agencies, mostly natural resource management public agencies (La Viña 2014).

##### **4.1.2. Experts**

While bureaucrats are central in environmental decisions in the administrative rationalism discourse, the policies also highlight the importance of experts in making these decisions. The policies' activities involving assessment, monitoring, and research imply the need for technical expertise. More explicitly, the Philippine Environment Policy (1977), the foundational environmental law, was addressed to all concerned government agencies and private entities and noted the role of 'special expertise' to comment on the EIS (*Philippine Environmental Policy* 1977,

sec. 4). Also, PD 983 stipulated that the lead NPCC Commissioner and the two Deputy Commissioners should have technical expertise in the area of pollution control (*Pollution Control Law 1976*). The NPCC is expected to provide technical, scientific, and similar work, including the required research facilities. It may also conduct scientific investigations and other research to find efficient ways of pollution prevention (*Pollution Control Law 1976*).

## **4.2. Assuming hierarchical natural relationships**

### **4.2.1. Nature's subordination to human problem solving**

In a 1977 speech, Marcos expressed a positive outlook about environmental problems, that there was now better comprehension and capacity to address these problems better (Marcos 1977). Some of these capacities are in the country's bureaucracy and expertise. He echoed the assessment of the country's environmental policy and program by the United Nations Environmental Programme (UNEP). According to him, the UNEP acknowledged the "sophistication of our organizational structures, the quality of our expertise, and the relevance of our research program, laws and policies" (Marcos 1977, para. 52).

Similar to the outlook of Marcos, the environmental policies assumed that nature is subordinated to human problem solving. The policies acknowledged the growing concerns over environmental problems in part due to industrial activity. However, these concerns can be effectively addressed with a holistic environmental protection program (*Philippine Environmental Policy 1977*), prescribing appropriate environmental management policies and imposing environment quality standards (*Philippine Environmental Code 1977*), and strengthening an implementing agency tasked to prevent and control environmental pollution (*Pollution Control Law 1976*).

#### **4.2.2. The state's subordination of its people**

Most of the environmental policies during this period assumed the state's subordination of its people. Most policies do not have provisions for forms of public participation in environmental decision-making. PD 1151 and PD 1152, for example, do not indicate any roles for the public or citizens in environmental governance (*Philippine Environmental Policy 1977*; *Philippine Environmental Code 1977*). Although later environmental policies will include 'public hearing' in the EIS system (Tuyor et al. 2007), environmental policy and practice remained largely centred on bureaucracies and experts.

In PD 1152, public participation is mentioned in mining but in the sense of economic participation that is attainable by well-resourced persons. PD 1152 stipulates that "the national government, through the Department of Natural Resources, shall undertake a system of gainful exploitation and rational and efficient utilization of mineral resources and shall encourage citizen participation in this endeavour" (*Philippine Environmental Code 1977*, s 40). The policy does not specify the role of citizens and how they are expected to participate in this gainful use of mineral resources. However, the measures identified to achieve efficient use of minerals require substantial financial and technical requirements, and, therefore, are only attainable by well-resourced individuals. Some of these measures are in the areas of technology research and development, technical training in mining-related fields, and regulation, advancing exploration, and processing of minerals (*Philippine Environmental Code 1977*, s 41).

Later, the 1979 and 1984 implementing rules for the EIS system included "public hearing" in the EIA process (Tuyor et al. 2007, 13). This process, considered a method of citizen involvement, indicates that democratic pragmatism discourse was gaining some ground in Philippine environmental policies. Broadly, public hearing often involves information dissemination activities by project proponents and face-to-face meetings where project proponents present their case to locals and where locals express their issues with the project, such as concerns and objections (Kengne, Evouna, and Bitondo 2013; Appah-Sampong 2003). The policy's inclusion of this participatory method is a positive development in

environmental decision-making. However, on the whole, environmental policy and practice remain organised around the administrative rationalism discourse.

#### **4.2.3. The dominant position of administrators and experts**

The policies featured the domination of administrators and experts within the state. The policies designated decision-making powers to administrators who work closely with experts and deploy their knowledge. At times, administrators are technical experts themselves. In this regard, administrators and experts, particularly with backgrounds in science, engineering, and management, have a dominant role in this discourse. PD 1151 stated that agencies with mandate or special expertise shall comment on the EIS (*Philippine Environmental Policy* 1977, s 4). PD 1586 mandated the NEPC to create the regulatory requirements for EIS compliance and conduct EIS review for an ‘environmentally critical project’ (*Presidential Decree No. 1586* 1978). PD 984 required the lead NPCC commissioner to have strong administrative capacity, i.e. who should have “proven executive ability” (*Pollution Control Law* 1976, s 3). Aside from having backgrounds in pollution control, the policy preferred one deputy commissioner to be a sanitary engineer and the other, a lawyer (*Pollution Control Law* 1976, sec. 3).

These provisions in different environmental policies during the Marcos regime demonstrate features of administrative rationalism. However, given crony capitalism (Kang 2002) and plunder politics (Aquino 1999) during the Marcos administration, administrative rationalism was highly susceptible to be corrupted by political and financial interests.

### **5. Administrative rationalism discourse after Marcos**

When Marcos’s dictatorial regime ended in 1986, his successors legislated policies further promoting environmental protection (La Viña 2014), and featured elements of administrative rationalism. For example, former President Corazon C. Aquino issued Executive Order No. 192 (EO 192) in 1987 that created the Department of Environment and Natural Resources (DENR). The policy continued the legacy of the administrative rationalism discourse in Marcos’s policies since the late 1970s. The language of EO 192 has measured warnings on environmental problems and implied optimism on mostly administrative solutions

(*Reorganization Act of the Department of Environment and Natural Resources 1987*, par 3-5, s 4):

WHEREAS, the environment will be affected by the use, development, management, renewal and conservation of the country's natural resources;

WHEREAS, there is a need to protect and enhance the quality of the country's environment;

WHEREAS, to attain this objective, environmental concerns and natural resources concern should be given equal attention by the Department;

....

The Department shall be the primary government agency responsible for the conservation, management, development and proper use of the country's environment and natural resources, specifically forest and grazing lands, mineral resources, including those in reservation and watershed areas, and lands of the public domain, as well as the licensing and regulation of all natural resources as may be provided for by law in order to ensure equitable sharing of the benefits derived therefrom for the welfare of the present and future generations of Filipinos.

The reorganisation resulted in the inclusion of natural resource management bureaus and environmentally-focused bureaus under the DENR. Natural resource management units included the Forest Management Bureau, Lands Management Bureau, and Mines and Geosciences Bureau. Environmentally-focused units included the Environmental Management Bureau (EMB) (former NEPC), Ecosystems Research and Development Bureau, and the Protected Areas and Wildlife Bureau. The Pollution Adjudication Board (PAB) (former NPCC) was included as a unit under the Department Proper of DENR. During the time of Marcos, the NPCC and NEPC were directly under his office.

By putting the environment and natural resources under one department, the premise that both programs need to be given the same attention became more attainable. Whereas previously, each program was primarily pursued by a separate executive agency with the prospect of seemingly opposing mandates, EO 192 enabled the simultaneous administrative concern for both the environment and natural resources by a single umbrella agency. Placing the environment and natural resources under the mandate of one department further strengthened the state's subscription to administrative rationalism in environmental governance. However, whether experts and bureaucrats can genuinely shape decisions is another matter. The Marcos regime showed that politics can severely constrain technocrats that can corrupt the ideals of administrative rationalism.

## 5. Chapter conclusion

This chapter moved beyond the political economy analysis of Philippine politics that can affect the mining sector by analysing the environmental dimensions. It also modified Dryzek's (2013) analysis of the Promethean discourse and administrative rationalism. In this chapter, **I argued that the Promethean discourse was consistent with state intervention and crony capitalism that corrupted administrative rationalism in Philippine policies.**

In the 1970s and 1980s, the permeation of environmental concerns, through the limits discourse, in Philippine policies were promising from an environmental perspective. However, the new mining law reiterated the enduring commitment of the state to the Promethean discourse that clashes with the limits discourse. Environmental problem-solving discourses, mainly administrative rationalism, offered relief to the tensions between the limits discourse and the Promethean discourse. Going back to Marcos's 1977 speech at the environmental management conference, the solutions to environmental problems rested on the shoulders of administrators and experts. Whether the environmental policies that featured elements of administrative rationalism would be able to relieve these tensions was not demonstrated.

The implementation of environmental policies will be subject to the competing interests of the state, civil society groups, and big business. At the level of policy, the Promethean discourse seems to take precedence over the other discourses. For example, the pollution control

mandate of the NPCC “shall be consistent with the national development plan of the country” (*Pollution Control Law 1976*, s 6b). The national development plan includes the modernisation and acceleration of mineral extraction in the country. Without making appropriate adjustments to economic policies, like in mining, it would be curious to see how pollution control and environmental agencies will exercise their mandate with the apparent contravening goals of Marcos’s state-led development regime. Whether or not these policies pushing for mineral extraction would be tempered by environmental concerns and rational decision-making would be determined in practice. These tensions in policies and the implementation challenges will be illustrated in the next chapter’s discussion of a mining operation and a slow onset mining disaster in the 1970s through to the early 1990s.

## Chapter 5

### **Promethean interests dominate in a slow onset mining disaster: The case of Marcopper and Calancan Bay (1975-1991)**

In the previous chapter, I showed that environmental discourses with some competing elements underpinned Philippine policies in the 1970s and 1980s. A fundamental difference between the limits discourse and Promethean discourse is the recognition or construction of nature—finite versus abundant natural resources—that has implications for national development goals, business interests, and environmental protection. The state adopted the administrative rationalism discourse in environmental policies in a way that could relieve the tensions between the limits discourse and the Promethean discourse. The Promethean discourse was consistent with the Marcos regime's state intervention in mining and crony capitalism that corrupted administrative rationalism. These political economic realities bolstered the Promethean discourse and undermined other discourses in Philippine policies. These competing discourses underpinning different policies can make policy implementation challenging.

I unpack these policy implementation challenges by taking a close look at an illustrative case—a slow onset disaster involving Marcopper Mining Corporation (MMC)'s mine tailings disposal from 1975 to 1991 into Calancan Bay, off Marinduque island's Santa Cruz town. The disaster started when Marcopper obtained its submarine tailings disposal permit in 1975 from the government. But the submarine tailings disposal method failed and Marcopper resorted to dumping the tailings on the ocean surface, violating the rules of their permit for submarine tailings disposal (Macdonald and Southall 2005). This is one of three mining disasters due to MMC operations that all happened in Marinduque island but affected different parts of the island. The slow onset mining disaster affected the eastern part of the island where Calancan Bay and Santa Cruz town are located. The other two are sudden onset mining disasters. Chapter 6 covers a sudden onset yet diminished tragedy happened in 1993 in Mogpog town in the northern part of Marinduque. Chapter 8 covers a sudden onset and spectacular mining disaster happened in 1996 in Boac town found in the western part of the same island.

The local environmental movement that embodied a green politics discourse persuaded administrators to take notice of the environmental degradation in Calancan Bay. Following

administrative rationalism, bureaucrats deployed expert knowledge to come up with environmental decisions. However, **I argue that, alongside state intervention, crony capitalism, and a weak bureaucracy, the Promethean discourse undermined both green politics and administrative rationalism.** Promethean thinking was consistent with state intervention and crony capitalism during the Marcos regime (Kang 2002; Manapat 1991). Support was given by the authoritarian regime of President Ferdinand Marcos, Sr. to Marcopper and its business-as-usual practice in pursuit of state developmental goals through industrial mining. This can be explained with the interests of Marcos and his cronies in Marcopper (Lopez 1992). State intervention and crony capitalism undermined the local environmental movement's green politics and corrupted administrative rationalism. The country's weak bureaucracy (Hutchcroft and Rocamora 2003; Hutchcroft 2014) also made administrative rationalism susceptible to corruption by political and financial interests. When the Marcos regime ended, the local environmental movement followed green politics and, again, urged bureaucrats to take action. After years of opposition by residents and their supporters, the government ordered Marcopper to pay pollution fines, although Marcopper was allowed to continue dumping mine tailing into Calancan Bay.

This chapter adds an environmental dimension to the political economy analysis of conflicts surrounding the slow onset mining disaster in Calancan Bay. It also modifies Dryzek's (2013) analysis of the Promethean discourse and administrative rationalism. Promethean thinking was consistent with state intervention and crony capitalism which are not considered in the standard accounts of the Promethean discourse. Furthermore, the country's weak bureaucracy made administrative rationalism vulnerable to political and financial interests.

### **1. Overview of the slow onset mining disaster, findings of political economy scholarship**

Marcopper was established in Marinduque island, the heart-shaped island province of the Philippines, located less than 200 kilometres south of Manila, the national capital. It rests on Sibuyan Sea, off southern Luzon, the northernmost major island of the country. When Marcopper was set up, a Canadian company, Placer Dome, Inc. (PDI), owned almost forty percent of the corporation. Preceding the establishment of Marcopper, PDI commenced mineral exploration in central Marinduque from 1956 to 1964 (Loudon 1976). This was followed by mine development in early 1968, and through to production in September 1969

(Loudon 1976). By the time that the slow onset disaster hounded Marcopper from the late 1970s, the company was already one of the mining giants in the country. Political and financial interests of Marcopper and the government, particularly Marcos and his cronies, affected environmental decisions regarding the slow onset disaster.

Business operations, such as industrial mining, have been criticised by civil society groups for their negative impacts on nature and society. The operations of MCC in Marinduque are no different. Around the same time that Marcopper achieved early success, a slow onset mining disaster resulting from Marcopper's operations began to unfold. The disaster started when Marcopper obtained its submarine tailings disposal permit in 1975 from the National Pollution Control Centre (NPCC). When the submarine tailings disposal method failed, Marcopper dumped the tailings on the ocean surface, violating the rules of their permit for submarine tailings disposal (Macdonald and Southall 2005). Marcopper initially estimated a discharge of 24,000 metric tons per day but increased to 50,000 metric tons per day by September 1978.<sup>2</sup> The tailings disposal on the ocean surface went on from 1975 until 1991, except for about seven months when Marcopper was given a cease-and-desist order in 1981, and again for one month for a similar order in 1988 (Macdonald and Southall 2005). This action indicates disregard for any limit to the assimilative capacity of the environment when it comes to wastes. Physically, the release of mine waste was gradual and did not receive immediate attention. But after sixteen years, the cumulative impact to nature, the residents' health, and livelihood was arguably serious. Marcopper and PDI denied any wrongdoing in relation to the impact of the slow onset disaster.

### **1.1. Physical characteristics**

The tailings disposal into Calancan Bay, off Marinduque's Santa Cruz town, is a slow onset disaster because of its temporal and spatial features. The amount of mine tailings dumped each day was controlled, protracted for several years, and dispersed into open water. The slow onset disaster's temporal dimension is the long period of the gradual release of a maximum of 50,000 metric tons of mine tailings per day for sixteen years from 1975 to 1991. In total, an estimated 200 million metric tons of mine tailings was dumped into the shallow waters of Calancan Bay using a fourteen-kilometre pipeline.

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<sup>2</sup> Guillermo Pecache to Ferdinand Marcos, July 3, 1981; MACEC private collection (photocopy).

The disaster's spatial dimension is that the tailings was released in open water. Later, the pipes were extended seawards with waste underneath that formed into a causeway about five kilometres in length and five hundred meters wide. The causeway was not covered for fourteen years. Even a few years after Marcopper stopped its operations, large areas of the causeway have been left uncovered. The tailings that get lifted by the ocean breeze and blown away inland are wittily called by locals "snow from Canada" (Coumans and Nettleton 2000, 60).

### **1.2. No shock value, slow response**

Because the tailings disposal into Calancan Bay was an intentional, calculated activity, it did not cause immediate, palpable effects on the environment and residents. The effects did not have shock value given the disposal's chronic characteristics. Because of this, attention was slow to come as well. In the early years of the tailings disposal into Calancan Bay since 1975, the environmental issue did not get the attention of those outside Marinduque. With pressure from local residents and some church workers through incessant petitions sent to different levels of government, the national media and the government eventually took notice of the situation (Coumans and MACEC 2002; Coumans 1999b). The national publicity influenced government to take action. Later on, the plight of Calancan Bay villagers also gained international attention, leading to meetings between PDI officials and NGOs in the 1980s (Coumans and MACEC 2002).

External actors may have been slow to give attention to the degradation of Calancan Bay. However, residents and their environmentalist allies have always maintained, from the early years, their fears that the disposal of relatively small amounts of mine tailings almost everyday for sixteen years had been causing accumulated and significant effects on the environment and residents (Macdonald and Southall 2005).

### **1.3. Corporate denial**

From the late 1980s to the 1990s, PDI and Marcopper officials denied any wrongdoing in relation to the slow onset disaster in Santa Cruz. Some denials were categorical. One example is Marcopper President Dodge's 1988 statement that the tailings disposal did

not cause any suffering to the fishers of Calancan Bay (Coumans and Nettleton 2000, 61). PDI spokesperson Hugh Leggatt in a 1997 letter denied their responsibility for the damage to marine life in the bay (Coumans and Nettleton 2000). PDI CEO John Willson denied the damage in Calancan Bay in a 1998 annual meeting (Coumans 1999b). Other denials seem less categorical. In the same 1998 meeting, Willson claimed they “followed the best waste disposal practices at the time” (Coumans 1999b, par 18). Coumans and Nettleton countered this best practice claim: “it was well known by 1975 that surface disposal of mine wastes, in shallow waters was destructive. It was for this very reason that the Philippine environmental authorities had insisted on submerged disposal for the Calancan Bay tailings” (Coumans and Nettleton 2000, 62). In 1989, PDI Corporate Vice President John Hick said “Marcopper does not believe it has polluted Calancan Bay in a legal sense” (Coumans 1999b, par 18). By “legal sense”, I infer this to mean that Marcopper followed all legal requirements with regard to submarine tailings disposal. This claim is debatable because they dumped tailings on surface water instead of carrying out submarine tailings disposal as stipulated in their permit.

The conflicts between actors surrounding the slow onset disaster could be understood using a political economy analysis. During the Marcos regime, environmental decisions surrounding the slow onset disaster in Calancan Bay were affected by state intervention and crony capitalism (Kang 2002; Manapat 1991). In part, the early success of Marcopper could be attributed to the Marcos regime’s state-led promotion of mining in the late 1960s (Camba 2015). During the slow onset disaster in the 1970s and 1980s, Marcos, Sr. supported Marcopper and its business-as-usual practice in pursuit of state developmental goals through industrial mining. The local environmental movement in Marinduque discovered that entities with major investments in Marcopper are connected to Marcos cronies (Macdonald and Southall 2005). This does not seem to be an isolated case. Lopez (1992) found out that Marcos cronies found their way as officials in the boardroom of major mining companies. When succeeding governments after Marcos tried to stop Marcopper’s tailings disposal into Calancan Bay, the mining company countered with legal threats. The country’s weak bureaucracy (Hutchcroft and Rocamora 200; Hutchcroft 2014) also made environmental decisions susceptible to corruption by the political and financial interests outlined above. These political economy analyses of the conflicts surrounding the slow onset mining disaster have environmental dimensions to be discussed below.

## **2. Marcopper's early Promethean success**

Before administrative rationalism gained a foothold in Philippine environmental policy making in the 1970s, Marcopper was already following the Promethean discourse. Marcopper followed some features of the Promethean discourse: 1) recognition or construction of abundant nature, markets, states, nature as “brute matter”, and capital-intensive technology; 2) assumption of hierarchical natural relationships.

### **2.1. Recognition of abundant nature, markets, the state; construction of nature as “brute matter” and capital-intensive technology**

#### **2.1.1. Abundant nature**

Prior to the Second World War, Philippine industrial mining focused on gold production. During the boom period in the 1930s, gold made up most of the mineral production, leaving the country's copper deposits largely untapped (Lopez 1992). After the war, when the industry was reviving its operations, the mining industry, including Marcopper, found lucrative opportunities in the country's large copper deposits. This availability of a new kind of resource was conducive to a Promethean view of general abundance.

#### **2.1.2. Markets**

Investors were attracted to Philippine copper mining due to global high demand for copper and its low supply. After the Second World War, post-war reconstruction and development in parts of Asia and Europe propelled the demand for copper from the late 1940s to the 1960s. Supply was low due to the political instability in copper-producing countries from Africa and South America. These conditions opened up opportunities for copper producers like Marcopper in the Philippines. Thus markets could be relied upon to direct effort that would eliminate scarcities, just as Promethean discourse suggests.

### **2.1.3. State**

Marcopper's establishment was at the beginning of a favourable phase for the mining industry through state intervention. When Ferdinand Marcos became the nation's leader in 1965, there was a state-led promotion of mining that favoured large-scale mining by giving big players incentives and low-interest loans from the United States (Camba 2015). In 1968, Marcopper borrowed US\$4 million. These funds had been crucial in acquiring and building the necessary technologies and infrastructure, and skill. In the Philippines, the state played a crucial role in advancing Promethean discourse and practice.

### **2.1.4. Nature as “brute matter”, capital-intensive technology**

With abundant copper deposits and strong markets for copper, investments poured into copper producers like Marcopper. Consistent with a Promethean view of the world, and in common with just about every mining company in the world, Marcopper recognised only the presence of exploitable ore, with little or no regard for the ecosystems where that ore was located. Huge investments in machinery, workforce, and infrastructure were essential in the extraction of mostly low-grade copper ores in the Philippines (Lopez 1992).

## **2.2. Assumption of hierarchical natural relationships**

Marcopper, like every mining company in the world, assumed hierarchical natural relationships with their business interests subordinating nature. During its mine-life until 1996, Marcopper had been a major copper mine player in the country. Just established in 1964, but by the mid-1970s, Marcopper was already the second largest copper producer in the Philippines, only a few years into production (Loudon 1976). Marcopper's quick growth is a manifestation of its successful and profitable exploitation of copper deposits in Marinduque. In large part, this was achieved because Marcopper undertook the huge task of building its mining town.

Aside from the need for resources and capacity in mechanical technology, copper production in the Philippines needed larger corporate operations and infrastructures

because mining operations were often set in remote, undeveloped areas. Marcopper set up the first mining town in the country (Lopez 1992). Though nestled in a remote area, Marcopper's mining town had urban amenities that supported its large workforce who possessed the necessary knowledge and capacities in mechanical technology and corporate operations needed for industrial copper mining (Lopez 1992).

### **3. Green politics**

Local residents and their supporters opposed the tailings disposal into Calancan Bay. They formed an environmental movement and followed features of green politics. Green politics refers to a discourse that envisions an alternative public sphere quite distinct to the 'gray mainstream of party politics' (Dryzek 2013: 225). It is characterised by the following elements: 1) recognition of complex ecosystems and construction of political structures; and 2) assumed equality among people.

#### **3.1. Recognition of complex ecosystems and construction of political structures**

##### **3.1.1. Complex ecosystems**

The local environmental movement recognised complex ecosystems as demonstrated by its documentation of the risks and effects of mine tailings disposal into Calancan Bay (Coumans 1999b; Coumans and MACEC 2002). This recognition can also explain the movement's steadfast opposition to the tailings disposal into Calancan Bay (to be discussed in the next subsection). From the planning stage of the submarine tailings disposal, concerned residents already opposed the plan. When concerned village leaders learned of Marcopper's plan to dump mine tailings into Calancan Bay in 1974, they sent petitions against it to the government (Coumans 1999b). The local environmental movement's early opposition at the planning stage of the submarine tailings disposal exhibits cautious awareness of significant risks involved in dumping toxic waste into Calancan Bay. This is especially true for the surrounding fishing and farming communities who intimately knew their natural surroundings and their vulnerability. Village residents surrounding Calancan Bay may have been naturally worried over the risk of pollutants having a negative effect on their

immediate environment, their health, and source of livelihood. As Marcopper carried on its tailings disposal into Calancan Bay, the residents found out that their initial fears about the negative impact of the disposal were happening and became the subject of various studies and fact-finding missions.

***Environment.*** Environmental studies indicate negative impact in Calancan Bay and surrounding areas. Environmental studies conducted during the period of tailings disposal into Calancan Bay indicate its ecological degradation (Macdonald and Southall 2005; Environmental Management Bureau 1990). Since Marcopper ceased dumping mine tailings into Calancan Bay in 1991, other studies were conducted that found heavy metals beyond acceptable limits in water, air, and soil samples in Calancan Bay areas and other parts of the island (Plumlee et al. 2000; Macdonald and Southall 2005; Futures Group International 2004).

In 2000, an environmental study was conducted by the United States Geological Survey (USGS). Water samples taken by the USGS from the tailings at the end of the causeway detected metal concentrations—copper, selenium, arsenic, and silver—that exceeded the acceptable levels by the US Environmental Protection Agency (EPA) (Plumlee et al. 2000). In the same year, the Non-Communicable Disease Control Service (NCDCS) reported that soil and air in Calancan Bay sites had excessive levels of lead and cadmium (Macdonald and Southall 2005). In fact, one soil sample had over three times the EPA lead standard and seven times the cadmium standard. For instance, the NCDCS found lead that is about double the EPA standard in the air around a school in Botilao village which is close to the bay. In 2003, soil samples taken in various parts of Marinduque by a member of the USGS research team found a number of sites with one or more metals above acceptable standard levels (Futures Group International 2004). There was one site with more than one metal detected that exceeded the standard levels. The “Calancan heavy mineral” site had excessive levels of lead, iron, copper, cadmium, chromium, vanadium, and zinc (Futures Group International 2004, 4–13).

In 2003, the USGS conducted an environmental study to validate earlier findings of lead contamination (Futures Group International 2004). Dust and water

samples were taken in Botilao village, where residents were reported to have elevated lead levels. The team did not find lead to be particularly high in the samples taken. They conjectured that lead-based paint found in the schoolhouse could contribute towards the presence of lead in the environment, together with the past and current use of leaded gasoline and lead solder used in water pipes (Futures Group International 2004, 4–23). Also, the USGS team found that Marcopper did not use lead and mercury in its operations. However, contamination of the environment could also come from heavy metals that are naturally present in the ground and unearthed during extraction.

**Health.** Health studies among some residents found them to have above acceptable levels of metals in their bodies (Coumans 1999b). Some of these findings are not entirely conclusive though, as they have not been validated by other later epidemiological studies. This is not surprising as epidemiological studies can be unreliable in proving health damage. But what is clear is that the mine tailings disposal into Calancan Bay had been a grave risk on the ecology of Marinduque and the health and safety of residents.

The Department of Health and the University of the Philippines (DOH-UP) conducted joint studies in 1997 among residents who were reported to suffer from symptoms of heavy metal poisoning (Coumans 1999b). In the initial study among 108 residents near Calancan Bay, two adults had lead contamination, and seven (out of twenty-two) children had lead and mercury levels above acceptable standards. Then Health Secretary Carmencita Reodica said that further monitoring will result in more detections of heavy metal poisoning (Coumans 1999b). In the expanded study, all fifty-nine children tested had above acceptable standards of lead in their blood, and twenty-five percent had above acceptable standards of cyanide. According to health professionals, lead and cyanide affect the central nervous system and poison the blood. In 1999 alone, nineteen children were detoxified in Santa Cruz town. Three youth who are Calancan Bay residents died in 1998, 2003, and 2004. They suffered from heavy metal poisoning or its symptoms and locals blame the mining company for their deaths (Macdonald and Southall 2005). Marcopper reported in 1996 that they gave assistance for the detoxification of some children with high level of heavy metals without accepting

responsibility for these health issues. But since then, communities reported that they have not received any health assistance nor compensation for their livelihood losses (Macdonald and Southall 2005).

In 2003, the USGS team attempted to validate the findings of the 1997 DOH-UP study by using a simulation formula (Futures Group International 2004). They calculated the potential lead levels in children based on the lead levels from samples around Botilao and other factors. The results were all slightly lower than the level of concern set by the US Centers for Disease Control. To be clear, the USGS report does not categorically contradict the DOH-UP findings, but the USGS findings could be interpreted as casting some doubt on the DOH-UP's findings. The USGS's simulations showed acceptable levels of lead while the findings of the DOH-UP showed above acceptable levels of lead. However, the Center for Environmental Concerns-Philippines reviewed the USGS report and criticised some of its findings. First, the review pointed out that the DOH-UP team had at least six medical toxicologists compared to the USGS team's lone medical doctor (Tapang et al. 2005). The USGS health team was not able to examine the patients treated by the DOH-UP team and was unable to review the raw data of the DOH-UP study (Tapang et al. 2005, 13). Second, the report said that USGS did not reach out to clarify their concerns about the DOH-UP study and learn the practical limitations of the study (Tapang et al. 2005, 12). This suggests that learning about the context of the DOH-UP may give the USGS a better appreciation of the findings of the DOH-UP team.

***Livelihood.*** Another impact of Calancan Bay's degradation was on the livelihood of nearby residents. Prior to the dumping of tailings, the majority of the 15,000 residents living near the bay easily made a living by fishing in the shallow parts of the bay (Coumans 1999b). In interviews with residents in 2004, they claimed that fishers need to go further out to sea and the catch is often not enough to make a living (Macdonald and Southall 2005). They are also concerned that the fish may be poisoned with heavy metals. But in 1996, the UN Mission found out otherwise as fish samples from Calancan Bay showed low levels of metal traces within allowable national and international standards (Macdonald and Southall 2005). The damage was not only limited to the waters of Calancan Bay, but to inland

areas as well, with impact on livelihoods. During the sixteen-year mine tailings dumping into the bay, when metal pipes connecting the mine and the outfall broke, the resulting pollution devastated large areas of forest, watershed, and small farms (Coumans and Nettleton 2000). Residents from surrounding communities claimed that the tailings from the causeway were blown inland onto agricultural lands (Macdonald and Southall 2005).

### **3.1.2 Political action**

The local environmental movement recognised the importance of political action by writing petitions to government to take action on the environmental issues in Calancan Bay (Coumans 1999b; Coumans and MACEC 2002). The movement tried to influence government from the planning stage of the submarine tailings disposal through to its implementation. In 1974, village leaders learned Marcopper's plan of dumping mine tailings into Calancan Bay, off Marinduque's Santa Cruz town. They united and sent petitions against the plan to different levels of government (Coumans 1999b). After a few years since residents begun incessantly sending petitions to different levels of government and with the national media focusing on Calancan Bay, government authorities finally took notice and did a preliminary environmental investigation (Coumans 1999b; Coumans and MACEC 2002). This showed some level of responsiveness from government, if urged by affected citizens.

### **3.2. Valuing equality among people**

Calancan Bay residents and their supporters valued equality among people. They were not deterred from mobilising despite the threats posed to activists during the authoritarian regime of Marcos that lasted until 1986. Whereas the declaration of Martial Law in 1972 restricted the ability of people to organise, citizens responded to human rights violations and corruption in government by forming national mass organisations and taking action against the government. The period from the 1970s to the early 1980s is considered to be the early phase of the Philippine environmental movement (Magno 1999). This budding movement, however, was subordinated to the broader anti-authoritarian struggle. Despite Marcos's iron-fisted rule, Filipinos

organised themselves and resisted some of his industrial development projects, like the highly controversial Chico River Dam in Kalinga-Apayao and Mountain Province and the Philippine Nuclear Power Plant in Morong, Bataan (Magno 1999). The Marcos regime regarded these industrial projects as priorities in line with a Promethean export-oriented development strategy, often without due consideration of environmental and social costs.

The civic mobilisation in Calancan Bay was an extension of the national mass movement and the budding environmental movement. In the 1970s and early 1980s, affected residents in Santa Cruz used mostly extra-legal forms of protest such as petitions and inciting shareholder action against Placer Dome, Inc. in Canada. Fishing villages were supported in their cause by Franco Preclaro, an engineer in a nearby town, and Sr. Aida Velasquez, a Catholic nun and environmental justice advocate from Manila (Coumans and MACEC 2002). Since 1981, the Roman Catholic Church, through its Social Action Center, has been supporting the anti-mining campaign. Such involvement of the Church or its members in political issues was common during this period (Kinne 1990). In an authoritarian setting under Marcos, it could be risky for citizens to confront the government with actions that may be taken as hostile or threatening. It is more strategic to plea for help from government through less confrontational forms of protest such as petition letters.

When the Marcos regime ended, sections of the mass movement no longer had to focus on broad anti-authoritarian struggles and were able to pursue a single-issue agenda, like the Philippine environment (Magno 1999). The Aquino administration that succeeded the Marcos regime had a more positive outlook on civil mobilisation. In fact, the new Constitution approved in 1987 promotes the development of non-government organisations (NGOs) and community-based organisations that contribute to national development. The opportunity sparked what Gerald Clarke called an ‘associational revolution’ that saw the increasing number of formal NGOs (Clarke 2013, 172). The Department of Environment and Natural Resources, newly formed in 1987, for example, actively collaborated with NGOs (Magno 1999). This meant that some in the environmental movement have opportunities to influence government.

With Marcos out of the picture, affected residents and their supporters once again used

petition letters against Marcopper and Placer Dome, Inc. (PDI). Residents appealed to bureaucrats to act on the environmental degradation of Calancan Bay. They resumed writing letter campaigns to different government levels to draw the attention of bureaucrats (Coumans 1999b). They also filed lawsuits against Marcopper and PDI. When the government renewed Marcopper's tailings disposal permit in November 1986, affected residents, resorted to filing a class action lawsuit that led to a cease-and-desist order in 1988 by the regulatory agency (Coumans and MACEC 2002). In 2004, affected residents filed another class action lawsuit at the Regional Trial Court against Marcopper and PDI. The residents claimed damage to health and livelihood due to the sixteen-year dumping into the bay. PDI was cleared in 2013, while the case with Marcopper is ongoing. (Cinco 2013; San Juan 2016). The difference in decision is based on their roles: PDI is primarily an investor and Marcopper is the operator. Because of these roles, Marcopper is the one responsible for the consequences of operations. However, critics of Marcopper said that often the top management positions were filled in by staff connected to PDI (Macdonald and Southall 2005).

#### **4. Administrative rationalism**

Around the same time as the tailings disposal into Calancan Bay commenced, some Philippine environmental policies, institutions, and practices were following elements of the administrative rationalism discourse. The government and Marcopper followed these elements: 1) constructing the administrative state and recognising the role of experts; 2) delegating authority to administrators and experts.

Despite the presence of some features of administrative rationalism, the discourse was constrained by the political and financial interests of Marcopper and the Marcos regime that were compatible with the Promethean discourse. While administrators recognised the role of experts, Marcopper bore the responsibility of conducting a full EIA. This policy remains to this day in the Philippine EIS system where project proponents are responsible for hiring experts who will conduct the EIA. Also, Marcos and his cronies were believed to have financial interests in Marcopper (Lopez 1992; Macdonald and Southall 2005). This can explain why Marcos overturned the bureaucrats' decision to halt the tailings disposal pending a full EIA of Calancan Bay and its surrounding area. After the downfall of Marcos, the succeeding administration tried to halt the tailings disposal into Calancan Bay but was

deterred by Marcopper's legal threats.

#### **4.1. Constructing the administrative state, recognising the role of experts**

##### **4.1.1. Administrative state**

After a few years since residents began incessantly sending petitions to different levels of government and with the national media focusing on Calancan Bay, government authorities finally took notice due to the publicity generated by the environmental degradation (Coumans 1999b; Coumans and MACEC 2002). When government decided to take action on the environmental issues in Calancan Bay, it assigned the primary responsibility to the NPCC. As the agency tasked to control pollution through regulation, NPCC staff went to Calancan Bay to conduct a preliminary environmental investigation. President Marcos tasked the military and the police to assist the NPCC in enforcing pollution control laws (Marcos 1977). However, the power to make decisions about the environmental issues in Calancan Bay rested with the Office of the President, which demonstrates strong centralised rule by the former dictator.

##### **4.1.2 Experts**

The government and Marcopper recognised the need for experts to resolve the environmental issues in Calancan Bay. After initial investigations, one of NPCC's orders to Marcopper was to conduct a full EIA. In succeeding correspondence between NPCC and Marcopper, NPCC Commissioner Guillermo Pecache reiterated their directives based on their environmental observations of Calancan Bay.<sup>3</sup>

Marcopper hired consultants who conducted EIAs from 1975 to 1989 to investigate the impact of the tailings disposal system in Calancan Bay. For a period of ten years, some EIA findings were that there had been: a reduction of the number of species,

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<sup>3</sup>Guillermo Pecache to Marcopper President, June 23, 1981; Guillermo Pecache to G. W. Marlow, October 6, 1981; MACEC private collection (photocopy).

destruction of marine life, full environmental degradation of the immediate area surrounding the tailings outlet, and smothering of mine tailings on eighty-five square kilometres of corals and seagrass (Macdonald and Southall 2005). Early on, negative environmental impact was found out by EIA consultants contracted by Marcopper. In 1978, Synergistic Consultants Inc. reported the negative impact on flora and fauna, such as the reduction of the number of species (Macdonald and Southall 2005). They also reported worsening conditions by 1980 with the destruction of marine life habitat and the full environmental degradation of the immediate area around the tailings outlet to the bay (Environmental Management Bureau 1990). For instance, invertebrate species declined from 26 to 10 between 1975 and 1980. In 1981, Rescan Environmental Services warned that the continuation of surface ocean tailings disposal poses risk of protracted coral reef damage and losses, and any resulting effects to fisheries (Macdonald and Southall 2005). True to that foreboding, the NPCC's 1985 study found out that eighty square kilometres of Calancan Bay's seabed, corals and sea grass, was smothered by mine waste, an estimated damage of PHP 521 million (over US\$ 10 million) (Macdonald and Southall 2005).

#### **4.2. Delegated authority to administrators and experts.**

Administrators had delegated authority and ordered the deployment of expert knowledge. Marcopper recognised the authority of NPCC and the Office of the President. On September 20, 1980, Fidel V. Ramos, then Director General of the Integrated National Police, wrote about the degradation of Calancan Bay's environment and marine life to the NPCC (Macdonald and Southall 2005). The NPCC, in turn, assessed the situation in 1981 and found out "fast increasing deterioration of Calancan Bay."<sup>4</sup> NPCC Commissioner Guillermo Pecache directed Marcopper to: (1) "immediately cease and desist discharging dredged materials from San Antonio tailings pond", (2) "conduct pertinent studies within three months regarding the best alternative method", and (3) "submit an environmental impact statement on the development of San Antonio copper deposits."<sup>5</sup> Marcopper appealed the cease and desist order to the NPCC and later to the Office of the President. In the end, Marcos overruled the NPCC

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<sup>4</sup>Guillermo Pecache to Marcopper President, telegram, June 17, 1981, MACEC private collection (photocopy).

<sup>5</sup>Ibid.

decision and allowed Marcopper to continue dumping toxic waste into Calancan Bay, meaning corporate power had overruled administrative rationalism.

When Marcos was ousted in 1986, the opening of democratic space curbed cronyism but did not get so far as democratic control over mining operations, only so far as freeing administrative rationalism. The government took notice of the petitions by affected residents against Marcopper. In November 1986, the NPCC issued to Marcopper a temporary tailings disposal permit in Calancan Bay, provided they move their tailings disposal system to a tailings dam within two months. When Marcopper's temporary tailings disposal permit expired on February 10, 1987, the government once again attempted to stop the tailings disposal in Calancan Bay (Coumans 1999b). The Pollution Adjudication Board (PAB), that succeeded the NPCC, issued a cease-and-desist order on April 11, 1988, restraining Marcopper from ocean surface disposal (Coumans 1999b). However, due to Marcopper's legal threat, the government reversed its decision, paving the way for administrative rationalism giving way to corporate power. In the same year, the Department of Environment and Natural Resources (DENR) set up the Calancan Bay Rehabilitation Program (CBRP) and ordered Marcopper to pay PHP 30,000 (about US\$ 600) per day for rehabilitation work (Macdonald and Southall 2005).

The case showed that administrative rationalism was constrained by the political and financial interests of Marcopper and the Marcos regime that are compatible with the Promethean discourse. Marcopper was also responsible for hiring experts to conduct a full EIA. These findings are consistent with some themes in the political economy literature where state capacity in social and environmental regulation of mining has been hollowed out and the responsibility is instead passed on to the private sector and local communities (Hatcher 2015; Hatcher 2012). These cases are exemplified in the World Bank's promotion of mining regimes that encouraged the entry of mining investment in developing countries like the Philippines. In the 2000s, the World Bank's mining reforms emphasised poverty reduction goals with novel emphasis on social and environmental concerns. The reforms involve technocratic tools (like EIA) that dissipate local opposition and investment risks for the private sector (Hatcher 2012; Hatcher 2015).

## **5. Reinforcing Promethean interests to undermine other discourses**

As the slow onset disaster in Calanacan Bay had been unfolding, different environmental discourses came into play, and actors followed different discourses with some competing elements. Motivated by green politics, the local environmental movement had been urging government to take action. Eventually, consistent with administrative rationalism, government administrators responded and deployed expert knowledge to address the slow onset mining disaster. Specifically, the administrative rationalism practice of EIA was central in the production of expert knowledge for rational environmental decision-making. Ideally, administrative rationalism that applies to government should be devoid of politics and allow bureaucrats to form environmental decisions based on expert knowledge (Dryzek 2013). However, administrators and their decisions can be corrupted by political and financial interests. This can happen when corporations are in control or have a strong influence in producing environmental knowledge, say through EIA (Kirsch 2014; Hatcher 2012).

In this case, not only was Marcopper mainly responsible for hiring consultants who conducted the EIA, the Marcos regime was also believed to have financial interests in Marcopper through Marcos's cronies. Promethean thinking, alongside the political and financial interests of the Marcos regime and Marcopper, countered the decisions made by the NPCC. The NPCC's actions were countered by: 1) Marcopper's appeals and legal actions, and 2) a state-led development agenda and crony capitalism. Although these elements are not part of Dryzek's (2013) analysis of the Promethean discourse, Marcopper's legal actions, state intervention, and crony capitalism were consistent with Promethean thinking.

### **5.1. Financial interests, legal action, and Promethean thinking**

#### **5.1.1. Appeals**

From 1975 to the early 1980s, Marcopper had been persistent in pushing for the mine tailings disposal into the open waters of Calanacan Bay. Marcopper's persistence rests on the Promethean thinking that constructs a forgiving nature, that can justify a light treatment of the negative impacts observed by the local environmental movement and government administrators. In 1981, when the NPCC issued a cease-and-desist order to Marcopper, the company halted the

disposal of dredged tailings into Calancan Bay. However, in succeeding correspondence between the company and NPCC, Marcopper Vice-President for Operations, G. W. Marlow, initially pleaded for the continuation of the disposal practice and later qualified the appeal by seeking a reduced amount, until a full EIA had been conducted and a final decision has been made. Marlow reasoned that halting the operations would result in negative social and economic impacts, an outfall extension resulted in early signs of rehabilitation, ecological damage due to the tailings disposal is not conclusive, and considering tailings dam as an alternative is not cost efficient.<sup>6</sup> Pecache granted the request with some conditions.<sup>7</sup> At the end of 1981, Marcopper President Gareth Jones wrote to President Marcos to overturn the order of the NPCC. Jones claimed that the negative environmental and health impact on the tailings disposal into the bay are lies and that the constraints on their operation threaten the viability of the entire mine project.<sup>8</sup>

### **5.1.2. Legal actions**

Marcopper resorted to legal threats and legal actions in response to government orders to stop the dumping of mine tailings into Calancan Bay. When PAB restrained Marcopper's tailings disposal into Calancan Bay in 1988, Marcopper President John Dodge made an appeal to President Corazon C. Aquino to overturn the order. Marcopper threatened to file a lawsuit against the PAB. Aquino took the threat seriously and overturned the order (Coumans 1999b). Marcopper paid the daily rehabilitation fee required by the DENR from 1988 to 1991. Marcopper stopped dumping waste into the bay in 1991 when a new tailings dam was ready. Marcopper and PDI also fought the lawsuits filed against them by affected residents.

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<sup>6</sup>G. W. Marlow to Guillermo Pecache, June 22, 1981; September 15, 1981; MACEC private collection (photocopy).

<sup>7</sup>Guillermo Pecache to G. W. Marlow, October 6, 1981, MACEC private collection (photocopy).

<sup>8</sup>Gareth Jones to Ferdinand Marcos, December 22, 1981, MACEC private collection (photocopy).

## **5.2. Promethean discourse, state intervention, and crony capitalism**

### **5.2.1. State-led development**

There was conflict between the industrial commitment of Marcos's state-led developmental agenda, consistent with the Promethean discourse, and the NPCC's efforts in making rational environmental decisions. Consistent with the state-led development agenda, in early 1982, the government under Marcos ruled in favour of Marcopper's request in 1981 to continue their tailings disposal in Calancan Bay. The Office of the President issued a memorandum to the NPCC allowing Marcopper to continue its surface ocean disposal of mine tailings without restraints.<sup>9</sup>

### **5.2.2. Crony capitalism**

Crony capitalism is not part of the Promethean discourse. But Promethean self-interest can be comparable to cronies' self-interest, albeit in a corrupt way. The Philippines' economic failures are often linked to crony capitalism or government meddling with economic affairs in order for powerful business sectors to gain from government largesse and incompetent civil servants (Kang 2002, 2). During the Marcos regime, cronies were given concessions in logging, tobacco, banking and construction (see Hutchcroft 1998; Manapat 1991). Mining is not an exception (Lopez 1992). Allegedly, Marcos secretly owned shares of stock in Marcopper (Macdonald and Southall 2005). The Philippine Commission on Good Government that investigated the Marcos's ill-gotten wealth found that Marcos owned almost fifty percent of Marcopper through front entities: Performance Investment Corporation, Independent Realty Corporation, Mid-Pasig Land Development Corporation, Fairmount Real Estate, Inc. (Coumans and Nettleton 2000).

The actions of Marcopper and the Marcos regime reflect some features of the Promethean discourse: the recognition or construction of forgiving nature and the domination of nature

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<sup>9</sup>Gareth Jones to Ferdinand Marcos, December 22, 1981, MACEC private collection (photocopy).

through industrial extraction of minerals with little concern for ecological impacts. The discourse was also consistent with state intervention and crony capitalism, although these were not considered in Dryzek's (2013) analysis of the Promethean discourse. Promethean thinking, alongside Marcopper and Marcos's political and financial interests, undermined administrative rationalism, i.e. authority of administrators who tried to deploy expert knowledge through the conduct of a full EIA. By extension, Promethean politics also undermined green politics, i.e. the local environmental movement's urging of government to act.

The Promethean discourse and administrative rationalism both favour economic growth, but they differ in the recognition of and response to environmental impact. The Promethean discourse can have little regard for environmental impact, or that if it recognises environmental issues then nature could repair itself or get aid from human innovation. Environmental problem-solving discourses like administrative rationalism seriously recognises industrialism's environmental impact and has a number of ways to solve environmental problems.

## **6. A slow onset mining disaster and ecological reflexivity**

Looking at this case from the perspective of ecological reflexivity, I will draw out some normative lessons from the slow onset mining disaster. By ecological reflexivity, I refer to a system's self-critical capacity, i.e. to recognise environmental signals, rethink practices, and respond by changing practices whenever appropriate. The local environmental movement which followed green politics discourse did promote recognition of the onset of disaster, but this was constrained by the Promethean discourse that legitimised corporate interests and enabled corporate power. The findings contribute an empirical illustration of what Dryzek and Pickering (2019, 127) refer to as a "productive partnership" between humans and nature in responding to environmental crises. In this case, the partnership becomes crucial because of the slow unfolding of the environmental signals. The environmental movement's local position allowed sensitivity to slow environmental changes that propelled it to challenge dominant environmental discourses. This conforms to Plumwood's (2002) position that marginalised citizens can relay the environmental harms they experience to more powerful actors that can be less sensitive to these harms. The local environmental movement's actions also concur with Curato's (2019) findings that disaster-stricken communities can be active in

pursuing the rehabilitation of their place and future. Despite the odds, the local environmental movement attained limited gains in challenging the Promethean discourse held by Marcopper and the authoritarian regime of Marcos.

### **6.1. Green politics and recognising a slow onset mining disaster**

On a system level, green politics promoted recognition of the slow onset disaster, particularly to government administrators. The physical characteristics of the slow onset mining disaster were not immediately palpable but the local residents and their supporters were capable of recognising the risks and impacts of tailings disposal into Calancan Bay.

Even at the planning stage of the tailings disposal, Calancan Bay residents anticipated the impact on nature, their health, and their livelihood. In the early years of tailings disposal and despite Marcos's oppressive regime, the bay's residents who knew the waters intimately found the situation worrying enough to organise and oppose the disposal. They were steadfast in opposing Marcopper's sixteen-year tailings disposal into Calancan Bay. As later environmental and health studies had shown (Coumans 1999b; Macdonald and Southall 2005; Plumlee et al. 2000), residents had good reason for their fears and concerns. The local environmental movement had some successes in urging government to recognise the slow onset mining disaster and take action.

### **6.2. Administrative rationalism and unreflexive behaviour**

Administrative rationalism can be reflexive if expert knowledge can be plural and is open to other forms of knowledges, and if bureaucrats are open to modifying environmental decisions based on changes in the input of experts. These prospects for reflexivity can be limited by technocracy that is over-reliant on experts and the susceptibility of the bureaucracy to be corrupted by political and financial interests.

The technocratic nature of administrative rationalism, particularly the EIA practice, can make it unreflexive in response to a slow onset mining disaster. The positive contribution of green politics in recognising the disaster showed the limits of administrative rationalism in that government may not have taken action without the

urging of the local environmental movement. Administrators and formally-trained experts have limited perspectives that may constrain ecological reflexivity. This is what John Dewey warned about his fears that industrial society's over-reliance on experts may hinder citizen participation (Fischer 2000). In this case, administrators and experts lacked local environmental knowledge of a depth that could have induced them to question the fundamentals of mining operations, meaning the system they helped constitute was unreflexive, particularly in the early years of the slow onset mining disaster. In the case study, the local residents of Calancan Bay were in a better position to anticipate and recognise the impacts of the mining operations. This supports the case towards opening up administrative rationalism practices like EIA to include other actors like mining-affected residents in knowledge production and environmental decisions. Some EIA practices have participatory aspects in the form of public hearing or comment that can be a starting point for making administrative rationalism practices more participatory. Reflexive action entails openness to various environmental perspectives that can be subject to critical examination and form the basis of environmental decisions.

Apart from the centrality of experts in Philippine EIA, the case study also revealed the vulnerability of administrative rationalism, particularly the country's weak bureaucracy (Hutchcroft and Rocamora 2003, Hutchcroft 2014), to be corrupted by the political and financial interests of the Marcos regime (Lopez 1992). As what happened in the slow onset mining disaster, the attempt of bureaucrats to deploy expert knowledge was constrained by Marcos's unilateral decision to let Marcopper conduct its business-as-usual practices.

### **6.3. Promethean discourse and anti-reflexive behaviour**

The Marcos regime, Marcopper, and PDI demonstrated anti-reflexive behaviour. Their Promethean interests undermined the recognition of the slow onset mining disaster by the local environmental movement and government administrators.

The categorical denials by Marcopper and PDI of wrongdoing or negative impact indicate anti-reflexive behaviour in the sense that established practices were perpetuated without regard to disastrous consequences. Local residents and government

administrators observed the environmental and social impacts of the slow onset mining disaster. The findings of EIA consultants contracted by Marcopper and PDI also indicated negative environmental impacts in Calancan Bay. Despite these different voices expressing recognition of the slow onset disaster, Marcopper and PDI dismissed these observations and study results.

Administrative rationalism should be devoid of politics, but Promethean politics interfered with the rational environmental decision-making. Under an authoritarian regime, bureaucrats were ultimately subordinated to the strongman Marcos. Marcopper persistently pushed for the continuation of its operations because of its commitment to the growth of their mining operations. It is not surprising that Marcos heeded Marcopper's Promethean justifications because these were in line with the regime's state-led development agenda and beneficial to Marcos and his cronies.

Another way that Promethean politics interfered with administrative rationalism is through the contractor-payee relationship between mining companies and EIA consultants. Expert knowledge, in this case, is conscripted by corporate interests. EIAs by law are directly commissioned by project proponents. EIA findings commissioned by Marcopper in the 1980s indicated the risks involved in the continuation of the tailings disposal into Calancan Bay. Ultimately, "the contractor-payee relationship [in Philippine EIA practice] spawns doubt on the authenticity, sincerity, and neutrality of the study" (Camba 2016, 82). Expert knowledge can be genuinely useful in mineral resource governance if mechanisms are set up to make its production more independent, transparent, and accountable.

## **7. Chapter conclusion**

The case showed the important role of the local environmental movement of transmitting the environmental impact of the mine tailings disposal to the government. Administrative rationalism by itself could not secure response to the environmental degradation in Calancan Bay. Following green politics, the local environmental movement had to urge bureaucrats to act. The bureaucracy tried to take action against Marcopper, but **I argue that the Promethean conditioning of the interests of the state and the monetary interests of**

**Marcopper undermined the bureaucracy's efforts to make administratively rational environmental decisions.**

The slow onset mining disaster was limited in its capacity to generate immediate response from government and Marcopper. Could something more dramatic compel actors to respond to a mining disaster? In the next chapter, I will discuss a sudden onset yet diminished mining disaster in Marinduque's Mogpog River in 1993.



## Chapter 6

### **Promethean conditioning led to a sudden onset mining disaster: The case of Marcopper and Mogpog River (1993)**

In the previous chapter, the slow onset mining disaster's physical characteristics—the gradual but protracted dumping of mine tailings into Marinduque island's Calancan Bay—contributed to the government's sluggish response to the disaster, particularly in the early years. The case illustrated the domination of the Promethean discourse amid the tensions among different environmental discourses surrounding the slow onset mining disaster. However, another case showed that Promethean discourse continued to condition outcomes even amid a mining disaster with dramatic features. I show this with an illustrative case—the 1993 sudden onset mining disaster in Marinduque's Mogpog town.

The 1993 mining disaster is the second of the three mining disasters in this study due to MMC operations that all happened in Marinduque island but affected different parts of the island. This second one happened in Mogpog town in the northern part of Marinduque. The first one was discussed in the previous chapter; a slow onset mining disaster that affected the eastern part of the island where Calancan Bay and Santa Cruz town are located. The final mining disaster discussed in Chapter 8 is sudden onset and spectacular that happened in 1996 in Boac town found in the western part of the same island.

Not long after Marcopper Mining Corporation (MMC) finally stopped dumping mine tailings into Calancan Bay in 1991, another mining disaster struck Marinduque in 1993, this time affecting Mogpog town. Unlike the slow onset mining disaster in Calancan Bay, the 1993 mining disaster was overtly tragic and had serious consequences to affected residents. But despite its dramatic features, it did not seriously affect the industry and the state's regulation of mining, thereby diminishing the disaster's impact and consequences. Once again, Marcopper and its operations in Marinduque island were at the centre of this environmental catastrophe. The Maguila-guila Dam collapse severely affected the lives and property of Mogpog town residents.

The local environmental movement that followed a discourse of green politics mobilised to oppose the planned dam, and later demanded reparation from Marcopper after the disaster.

Green political discourse recognises complex ecosystems and human damage to them. At the planning stage, local residents did not think that the proposed dam was adequately safe. After the disaster, residents continued to monitor the impacts of the tailings failure as they demand justice for their suffering.

**I argue that Promethean conditioning undermined green politics, leading to the sudden onset mining disaster that failed to generate adequate response from the national government and Marcopper.** This argument adds an environmental dimension to the Philippine political economy and social movement perspectives on conflicts surrounding the 1993 mining disaster.

The Promethean discourse dismisses resource scarcity and environmental constraints, stresses the role of capital-intensive technology; and assumes hierarchical relationships, i.e. the domination of nature by humans. While available documents do not show information on risk assessment of Maguila-guila dam's earthen structure, the mining company's decision to push through with such construction plan indicates Promethean conditioning that constrained deep appreciation of the local area's natural hazards and the risks of dam failure. Consistent with Promethean discourse, Marcopper did not change their dam construction plans that were opposed by the local environmental movement and the residents who feared the risk of pollution into Mogpog River. This environmental knowledge was shared by the environmental movement, local experts, and residents informed by the history of Marcopper's environment impact in Calancan Bay, the residents' local knowledge, and the local environmental movement's international networks. After the disaster, Marcopper continued to shun responsibility by pointing a natural hazard, i.e. exceptional heavy rainfall, as the cause of the dam collapse. From an ecological reflexivity perspective, which requires recognition of environmental signals, social movements and vulnerable populations like residents with local environmental knowledge have the capacity to recognise potential and actual impacts of development projects like industrial mining. However, Marcopper manifested anti-reflexive behaviour as it downplayed the environmental impacts feared and observed by the local environmental movement. In mining, ecological reflexivity is the capacity to recognise the environmental risks and impacts of mining operations, rethink mining practices and goals, and respond to environmental issues by changing or reinforcing mining practices and goals. Contrary to expectation, the dramatic features of the 1993 mining disaster did not generate adequate response from Marcopper and the national government. This indicates that even

strong environmental signals from non-human nature need to be amplified by other actors like social movements and vulnerable populations. While it is not surprising that a corporation like Marcopper is Promethean and anti-reflexive, the 1993 sudden onset mining disaster illustrated that vulnerable groups like poor mining-affected residents could be enlisted in efforts to move corporations towards a reflexive direction, however unlikely it is that such efforts might succeed.

This chapter draws a considerable amount of data from the Mining Ombudsman's report (Macdonald and Southall 2005) and investigative reports by the Philippine Center for Investigative Journalism (Ilagan 2008a; 2008b; Coumans 1999c). While I am aware that these institutions or some of their writers have been known to be critical of industrial mining, I found the data in these reports useful because they are definitive in terms of structuring the knowledge claims of different actors. While I focused on these reports, I also used other sources by other experts and academics (A & S R Tingay Pty Ltd 2004; Regis 2005; Rescan Environmental Services, Ltd. 1989; Plumlee et al. 2000).

### **1. Overview of the sudden onset mining disaster in Mogpog; findings of political economy and social movement scholarships**

When the Tapian mine was getting depleted in the late 1980s, Marcopper began plans for a new mine in Marinduque. Marcopper found and developed the nearby San Antonio pit. The old Tapian mine was converted into a tailings dam to serve the new San Antonio mine. In 1991, the Maguila-guila Dam was also constructed to contain waste rock dump (Macdonald and Southall 2005; Rescan Environmental Services, Ltd. 1989). In the same year, the mine tailings disposal into Calancan Bay ceased as the Tapian Dam became operational. There were oppositions to the construction of the dam from local residents and local politicians, but the plan went ahead and was completed in 1992.

On December 6, 1993, Typhoon *Monang* (international name Lola) hit the Philippines, including Marinduque. On the same day, a mining disaster hit Marinduque's Mogpog town. The earthen dam on Maguila-guila Creek, part of the headwaters of Mogpog River, suddenly burst. Mogpog resident Marites Tagle recalled the events of that tragic day (Macdonald and Southall 2005, 24):

Between 4 to 5 in the morning, that was when the water rose. I turned on the radio and it said ‘the time now is 5 o’clock’ and just a little bit later it was like we were moving. Our house was moving then it fell. The nails were coming out of the sides of the house. We went with the flood.

My children didn’t even call ‘Mama’, we just fell. We were suddenly treading water; I thought I was just turning around, then I realised we were being washed away. I thought my children were gone because from the strength of the flood, no one could survive it and it was still dark. Then there was a bit of wind and rain. The end of my finger happened to hold on to the banana leaves that were stuck to the coconut tree. So, I grabbed and hugged it. Then I climbed to the top of the tree because if I didn’t climb the water would be past my head. When I was hugging the tree, the water was up to my neck.

Then my children were gone and I couldn’t look for them because the water was still high. I thought it was the end of the world. Around 9 o’clock the water was going down.

Tagle and her family members were not the only victims of this tragedy. Toxic wastewater from the dam ravaged the waterways, killing two people, flooding a number of downstream *barangay* (villages), sweeping houses away, damaging properties, killing livestock, and destroying crops. In the town proper, more than ten kilometres away from the dam, residents panicked as floodwaters quickly rose to the second story of houses. Angeline Angeles, Mogpog resident and local politician at the time, recalled that nearby Boac town celebrated its fiesta two days after the tragedy, and the celebrations were dampened with foul smell emanating from the rotting carcasses in Mogpog town (Coumans 1999c).

Physically, the disaster was palpable and dramatic, unlike Calancan Bay’s slow onset mining disaster. However, it did not get a lot of public attention (Coumans 1999c). I did not find documentation of the disaster right after it happened in national media, such as headlines of broadsheets or televised reports. There is also no record of immediate national government support to Mogpog residents. One explanation for this is that the mining disaster in Mogpog may have been deemed less newsworthy or significant compared to the other areas devastated by Typhoon *Monang*. This can be supported by United Nations Department of Humanitarian

Affairs (UN DHA) reports on Typhoon Monang. The Philippine resident coordinator of the UN DHA based the reports on information gathered by working closely with Philippine government officials. The report did not include Marinduque island in the list of worst hit areas of the typhoon (UN Department of Humanitarian Affairs 1993). A day after the typhoon struck the Philippines, the national government did not include Marinduque among areas in need of immediate assistance (UN Department of Humanitarian Affairs 1993).

### **1.1. Physical characteristics**

The sudden onset mining disaster in Mogpog had acute features. In temporal terms, the disaster happened suddenly. In Tagle's recollection above, the gushing water rose in such a short period of time, leaving no time to prepare and flee for safety. Spatially, the enormous wastewater deluged the river system that was not able to contain the toxic water. This caused the inundation and damage to livelihoods and properties to downstream *barangay* (villages), including the town centre.

### **1.2. Shock value, no response**

Unlike the slow onset disaster in Calanacan Bay, the toxic spill from the Maguila-guila Dam was not intentional. Neither the company nor the local residents had resources or safeguards in place for such disaster. Yet, the acute characteristics and consequences of the disaster experienced by local residents did not easily translate into justice claims for affected residents as the company capitalised on the natural hazard as the cause of the disaster.

### **1.3. Corporate denial**

The mining company consistently denied any responsibility for the disaster in Mogpog River. Steve Reid, Marcopper Resident Manager at the time, said the tragic event was caused by the uncommonly large amount of rainfall during a typhoon that brought water down from the valley with debris that blocked the dam's drainage, causing an overflow and eroding a section of the dam (Coumans 1999c). Residents countered this claim by saying that the amount of rainfall was usual for the island (Macdonald and Southall 2005). Later, the company used the same reason for the continued release of toxic water

into the river system. The argument of Marcopper is rather weak given that the Philippines is regularly subjected to typhoons and a responsible company should be prepared for such situations. In 1995, when a petition signed by local leaders claimed that toxic waste continued to flow into the river system, the company admitted some erosion of the dam but blamed it again to typhoon activity (Coumans 1999c). Whereas Marcopper engineers confirmed that the waste flowing from the dam is harmful (Coumans and Nettleton 2000), the company claimed that no conclusive studies established the relationship between the toxic waste and residents' illnesses (Ilagan 2008a).

Marcopper's financial support to victims was also presented as a denial of responsibility. So careful was the company to maintain its self-exoneration that Marcopper called the monetary support to residents 'community assistance' and not compensation (Coumans 1999c, par 19). Marcopper's monetary assistance, worth three million pesos (about USD 57,000), was routed through the town mayor who was left to figure out how to distribute it to victims. The mayor gave a maximum of PHP 1000 (about USD 19) to families deemed worthy of the assistance. Two families who lost a child received PHP 10000 (about USD 190) each (Coumans and Nettleton 2000).

Philippine political economy and social movement scholarships can provide insights on conflicts surrounding the 1993 sudden onset mining disaster in Mogpog. By the 1990s, the environmental movement in the Philippines had been developing (Magno 1999). The local environmental movement in Marinduque that opposed Marcopper at the time is part of this national movement that had been gaining organising capacity and networks. Marcopper's dismissal of local opposition to the proposed dam and its denial of responsibility after the disaster are a continuation of a history of resource plunder during the Marcos regime. The cronies of Marcos were known to infiltrate the board rooms of private companies (Hutchcroft 1998; Manapat 1999), including major mining companies like Marcopper (Lopez 1992; Macdonald and Southall 2005). Below, I add an environmental dimension to the social movement and political economy analyses of these conflicts surrounding the mining disaster in Mogpog.

## **2. Green politics**

The residents of Mogpog and the local government units mobilised from the proposal stage of the dam up to the aftermath of the dam collapse, consistent with a green politics discourse that: 1) recognised the reality of complex ecosystems and the importance of political action, and 2) valued inclusion and participation among people. They used their local environmental knowledge to connect the impact of waste materials from the dam to their ecosystem and so to their wellbeing. Using this knowledge, residents and local politicians mobilised to advocate for their concerns about their environment, safety and health, and livelihoods and domestic needs. They sent petitions to government authorities, organised and participated in protests, and filed a legal case against Marcopper.

### **2.1. Recognition of vulnerable and complex ecosystems and the importance of political and legal actions.**

#### **2.1.1. Vulnerable and Complex ecosystems**

Local residents recognised vulnerable and complex ecosystems from the planning stage of the dam up to the aftermath of the disaster. They were concerned about the impacts of mine waste seepage and flooding to their safety and health, environment, and livelihoods and domestic needs. Later on, some of their fears were corroborated by research findings of studies on Mogpog's river (Regis 2005; A & S R Tingay Pty Ltd 2004; Plumlee et al. 2000). This environmental knowledge was also shared by the local environmental movement that supported residents in their opposition towards Marcopper.

***Safety and health.*** In 1990, residents learned of Marcopper's plan to build an earthen dam on Maguila-guila Creek. They were worried that the dam's material and structural design would not be able to withstand the amount of rainfall that they usually get in the area. They were worried about the risk of flooding from a dam collapse on their lives and properties. They expressed fears over the spread of silt and waste into Mogpog River, and the effects of pollution on their health. In numerous petitions and resolutions they voiced their concern that the dam would not protect them from waste and would increase the risk of flooding. But

Marcopper went ahead with its plans for the dam, anyway, and began constructing it in 1991.

When the dam was completed in 1992 and used as a tailings dam, residents observed during the rainy season that the build up of siltation flowing out of the dam into the river increased the likelihood of flooding. Not long after, Typhoon *Monang* hit the country on December 6, 1993 and Maguila-guila Dam collapsed on the same day. In the aftermath of the disaster, the local environmental movement maintained that the earthen dam was inadequate to hold the silt from the waste rock dump and continue to threaten the lives and property of Mogpog locals. Inadequate repairs of the dam and no substantial remediation of the river have been causing long-term effects to Mogpog residents. The toxic silt-flows and run-offs had been affecting the health and safety of Mogpog residents, years after the disaster. The residents experienced not just physical but also mental health issues.

Based on the experiences of residents and the observations of a local health professional, advocates critical of mining put forward a narrative that attribute the physical and mental health issues of residents to the toxic river. In 2004, the Mining Ombudsman interviewed Mogpog residents who complained of skin problems and other illnesses (Macdonald and Southall 2005; Regis 2005). Complaints included itchininess, skin irritation, burns on feet and ankles, and darkening of toes. Since the disaster, Dr. Edzel Muhi, Mogpog's municipal health officer, said he has examined several cases of skin lesions and neurologic problems among residents living near the river (Ilagan 2008a). Dr. Muhi explained that the residents cannot avoid crossing the river despite its toxic state. Residents also observed these health problems occur especially to residents in upstream *barangay* (villages) closer to the dam and among children who often cross the river for their daily activities (Macdonald and Southall 2005). The worst reported physical effects are serious illnesses being linked by residents to the toxic mine tailings. In the tenth anniversary rally of the 1993 disaster, protesters against Marcopper named Mogpog residents Roden Reynoso and Ma. Cristina Limbo as some of the youths seriously affected by the disaster (Manalansan 2003). At the time, Reynoso

had recently died from prolonged sickness and Limbo was in critical state, both being attributed to the toxic spill.

The residents also suffered from mental health problems as they fear for their safety because of the deteriorated state of Maguila-guila Dam and the heavily silted river. After the disaster, Marcopper made some changes to repair the dam. Despite the repairs, in 1999, a resident of Bocboc village expressed fears that the dam might burst again (Coumans 1999c). The residents' fear was validated by an engineering audit. In 2001, an audit of the Marcopper's mine structures by Klohn Crippen consulting firm concluded that the Maguila-guila Dam posed serious threat to life and property (Macdonald and Southall 2005). Marcopper contracted Klohn Crippen to do the audit and the firm's findings implied the inadequacy of the repairs made to the dam after the disaster. It was quite remarkable that the company's own commissioned report found such severe dangers. Klohn Crippen recommended urgent actions on the structural issues of Maguila-guila Dam, but these were not carried out by the company.

Because of the dam's state of disrepair, residents continue to fear for their lives and property. In 2008, Mogpog resident Jocelyn Macunat expressed her worry over the Maguila-guila Dam: "*Hindi man kami makatulog sa gabi pag may ulan, may phobia na kami. Pag bumagyo lalo o lumindol, mapapabilis ang bigay ng tambak niyan. Doon kami takot, dahil baka maulit na naman yung dati*" (We can't sleep at night whenever it's raining, we already have phobia. A typhoon especially or an earthquake will only speed up the collapse of that dam. That's what we're scared of, that we'll have another tragedy.) (Ilagan 2008b, par 13-14). Macunat's family was a victim of the 1993 disaster.

Besides the threat of another dam burst, residents also worry over the likelihood of flooding, due to the continued flow of toxic silt from the dam to the river system. After the disaster, the riverbed was elevated due to the silt from the toxic spill, with some areas elevated up to seven metres. In 1998, Marcopper engineers verified that the continued flow of waste adds more risks of flooding (Coumans and Nettleton 2000). After the 1993 disaster, Marcopper repaired the dam by digging a channel on the top part of the dam wall that served as an overflow for

excess water in case of heavy rainfall (Coumans 1999c). In 2004, the Mining Ombudsman saw that the sediment reached the top of the dam such that water and sediment kept streaming into the river through the overflow (Macdonald and Southall 2005).

***Environment.*** During the planning stage of the dam, residents expressed their fears on impact of the main tailings to their environment, particularly to Mogpog River. Later, their fears were verified by their own observations and the findings of environmental studies (Regis 2005; A & S R Tingay Pty Ltd 2004; Plumlee et al. 2000). Soon after the dam's completion, residents observed and reported that silt was flowing out to the river that affected the river and aquatic life (Coumans and Nettleton 2000). When strong rains occur, residents reported sudden fish kills and foul odour. In the aftermath of the disaster, residents maintained their observations of the ongoing impacts of the tailings spill on their ecosystem. This narrative is put forward in reports by advocates critical of industrial mining (Coumans 1999c; Macdonald and Southall 2005; Ilagan 2008a) and corroborated by findings of scientific research (Plumlee et al. 2000; Regis 2005; A & S R Tingay Pty Ltd 2004). Based on these studies and observations by different actors, it is clear that Mogpog River has been toxic for years.

Across the years after the disaster, a common observation by residents (Ilagan 2008a), advocates (Coumans 1999c; Macdonald and Southall 2005), and scientific researchers (Regis 2005; A & S R Tingay Pty Ltd 2004; Plumlee et al. 2000) had been the distinct colour of the water—shades of blue, orange, or red. Acidic blue water is an indication of the presence of copper (Regis 2005). The orange colour of the silt must be an effect of acid mine drainage. The mixed orange and red colours of river water is an indication of acid mine drainage (A & S R Tingay Pty Ltd 2004). Acid mine drainage, produced when mining metals, can have negative effects on the environment and human life. In 1999, six years after the disaster, Coumans reported that Mogpog River is an odd “luminiscent creamy blue” and that piles of fine but strangely “orange silt” can be found in all places along the river (1999, par 2). Later in 2002, Ateneo de Naga University's Institute for Environmental Conservation and Research reported the reddish colour of the water flowing from the dam which could indicate acid mine drainage (Macdonald and

Southall 2005). In 2004, the Mining Ombudsman of Oxfam Australia also observed that just below the dam, the river was bright red and orange (Macdonald and Southall 2005). In 2008, Mogpog resident Adelina Mitante claimed the significant change in the river, even just the colour, “sometimes it’s blue, yellowish, or like rust” (Ilagan 2008a, par 32). A report by the US Geological Survey indicated that several and considerable mounds of waste around the mine site “are significant potential sources of acid-rock drainage into ground and surface waters” (Plumlee et al. 2000, 14). The team also observed longstanding drainage from mine waste piles and acidic runoff from rainfall.

The observable toxic features of Mogpog River were corroborated by Marcopper staff. In 1995, and local government officials and church representatives signed a petition demanding the removal of the siltation pond and earthen dam. The petition claimed the continued poisoning of the river’s aquatic life. In turn, company officials admitted the probable seepage of materials from the waste pond (Coumans 1999c). In 1998, Marcopper engineers Rick Esquierres and Jesus Cruz said that mine waste continued to flow from the dam into the river (Coumans and Nettleton 2000). Further, they verified that it is also harmful to residents and animals near the river.

More than ten years after the disaster, a Department of Environment and Natural Resources (DENR) report (Macdonald and Southall 2005) and other scientific studies (A & S R Tingay Pty Ltd 2004; Regis 2005) found heavy metal poisoning in the Mogpog River ecosystem, affecting water, soil, and living organisms.

In 2003, the Department of Environment and Natural Resources reported that parts of the river exceeded acceptable levels for lead, cadmium, and copper (Macdonald and Southall 2005). Also, dissolved oxygen, that is need by aquatic life, was below acceptable standards.

Other tests corroborated DENR’s findings. In 2004, tests on the water quality of the river found “clear evidence” of pollution (A & S R Tingay Pty Ltd 2004, 5). This assessment is based on the low pH and high levels of sulphates, iron, cadmium, copper, and zinc. These features are found just below the dam up to the

nearest *barangay* (village) of Bocboc. But some of these findings are also true in other downstream *barangay* (villages) up to Butan Sapan, located six kilometres away from the Maguila-guila siltation dam. Mogpog River is classified as Class C surface water in terms of the water quality criteria of the Philippine government (DENR Administrative Order No. 34, 1990). This means that Mogpog River is suitable for fishing, boating and other recreational activities, and as an industrial water source. However, the water tests showed that the river failed to meet the criteria for Class C classification (A & S R Tingay Pty Ltd 2004). Using a precautionary perspective, the report recommended that the findings would be appropriate to apply to the entire river which, therefore, was not fit for fishing, recreational activities, and industrial use.

Another study in 2004 examined the impact of acid mine drainage to soil and biological indicators of pollutions—flower buds, whole plants, and phytoplankton (Regis 2005). Using a comparative method, tests were done on samples taken from Mogpog River, and the control or reference site, Dawis River, that was unaffected by the disaster. Soil samples were compared in terms of acidity, colour, and heavy metal contamination (Regis 2005). Soil sample from Mogpog River were more acidic compared to Dawis River samples. Accordingly, the comparative results indicate that the high levels of acidity of Mogpog River is due to acid mine drainage from the siltation dam. The results on acidity are consistent with the colour observation of soil samples. Most samples from Mogpog River especially those close to the dam have lighter colour, indicating the leaching out of carbonates and clay materials. In Dawis River, all samples had dark colour, indicating high organic matter. Arsenic and copper levels are higher in Mogpog River than Dawis River. Heavy metals were found to be gradually deposited in soils along the banks of Mogpog River. Biological indicator samples were compared in terms of heavy metal contamination (Regis 2005). For plants, arsenic, copper, and cadmium levels were higher in Mogpog River than Dawis River. For cadmium, the level was higher than the natural content in plants. The heavy metal contamination from soil and plant samples collected from Mogpog River was low at the time of the study. However, Regis (2005) warned that the survival of remaining living organisms in Mogpog River would be threatened by the gradual

heavy metal contamination of the river that will result in the accumulation of heavy metals to critical levels.

***Livelihoods and domestic needs.*** When residents learned about the planned construction of a tailings dam in 1992, concerned residents of Mogpog were fearful of the impact on their livelihoods and domestic needs. After the disaster, residents avoided contact with the river for fear of toxic contamination. This meant a loss both of water for domestic use and a source of livelihood. This narrative was put forward in reports critical of the mining operations (Ilagan 2008a; Macdonald and Southall 2005; Coumans 1999c).

In 2002, a research team from the Ateneo de Naga University observed that residents of Bocboc village, just below the dam, were avoiding using water from the river (Macdonald and Southall 2005). Restraining from using the river's water is not surprising, as Magapua village resident Artoro Lines referred to the toxic waste-laden Mogpog River as 'dead' (Macdonald and Southall 2005, 25). This deplorable state of the river was a serious issue for Mogpog residents, mostly fisherfolk and farmers, because they relied heavily on the river for their livelihood activities and daily needs.

Farming and livestock raising were severely affected. Mogpog River ceased to be a safe water source for livestock and irrigation. Mogpog resident Milagros Muhi noticed that carabaos (water buffaloes) that often drink from Mogpog River seem to get thin (Ilagan 2008a). In 2004, residents claimed that some farmlands in downstream communities are still buried in silt and cannot be used to grow crops (Macdonald and Southall 2005). Since the disaster, other farmlands near the river are further contaminated by flooding and farmers find it difficult to grow their crops. Coconut, banana, and coffee productions are some of those affected (Macdonald and Southall 2005; Ilagan 2008a). Farmers who relied on Mogpog River for irrigation lost their water source.

Residents and fisher folk lost a rich food source and water source. Since the early 1990s, residents have observed the common occurrence of fishkills (Coumans 1999c). A few years after the disaster, residents expressed fears that the toxic spill

may have wiped out the *Bagtuk* crab, a species unique to Mogpog River (Macdonald and Southall 2005). Residents also lost a water source for domestic and recreational needs. The river used to be a water source for bathing and washing clothes. After the disaster, residents used alternative water sources located farther away. They also used the river for swimming but have ceased to do so after the disaster.

### **2.1.2. Political and legal actions**

The local environmental movement recognised the importance of political and legal actions to gain the attention of government authorities and Marcopper and seek redress for injustices experienced by Mogpog residents. They sent petitions to government, participated in protests, and filed a legal case against Marcopper.

***Petitions.*** When Mogpog residents and their supporters learned about the proposed Maguila-guila Dam in 1990, they sent petitions against the proposal to national-level agencies and politicians. In July 1990, 130 Bocboc village residents living just below the proposed dam site sent a petition to the Department of Environment and Natural Resources, asking the agency to reject the proposal (Coumans 1999c). The people's organisation Marinduque Council for Environmental Concerns (MACEC) also sent a petition to then President Corazon C. Aquino, through a senator, to reject the construction of the proposed dam at the headwaters of Mogpog River (Coumans 1999c). The petition was signed by 499 individuals that included *barangay* (village) leaders along Mogpog River. Despite the residents' opposition, the dam was approved and was completed in 1992.

After the disaster happened and with the worsening structural damage to Maguila-guila Dam, residents and local politicians signed many petitions and resolutions urging authorities and the company to remove the siltation pond and dam. As residents expressed worries over another dam burst, *barangay* (village) leaders of Mogpog town signed a petition in 1995 demanding the removal of the pond and dam. The Mogpog Town Council also passed several resolutions that were sent to Marcopper since 1993 that highlighted the dam's weaknesses, the threats of another collapse, and their demands. In November 1995, they described in a

resolution that “there are portions of the river which are even higher than the *barangay* roads which used to be meters higher than the river base” (Coumans 1999c, par 23). In a 1998 resolution, the town council demanded the removal of the dam and waste rock dump, and full rehabilitation of the Mogpog River and watershed (Macdonald and Southall 2005).

**Protests.** Mogpog residents also brought their justice claims onto the streets. In 2003, ten years after the tragedy, protesters decried the injustice that they experience as the effects of the disaster continue to affect the environment, their health and safety, and livelihoods (Manalansan 2003). They called for banning large-scale mining in the province (Kalikasan PNE 2003).

**Legal case.** Mogpog residents filed a case against Marcopper to seek justice for the disaster. In 2001, sixty plaintiffs from Magapua and Bocboc villages filed cases, including requests for damages, against Marcopper (Legal Rights and Natural Resources Center-Kasama Sa Kalikasan 2010). Their quest for justice, however, has been elusive with administrative delays, and alleged tactics by Marcopper to evade criminal liability. In 2010, still at the pre-trial stage, the sitting judge, for health reasons, went on indefinite leave and then into retirement. Marcopper also filed a motion for reconsideration that plaintiffs claimed to be a delaying tactic. Lawyer Minerva Quintela, lead counsel of the victims, emphasised that Marcopper’s motion for reconsider should be discarded because, among other things, the company rehashed old arguments that have been answered in previous exchanges of pleadings (Legal Rights and Natural Resources Center-Kasama Sa Kalikasan 2010). Quintela also received reports alleging that Marcopper offered settlement money to plaintiffs, through the leaders of Magapua and Bocboc villages (Lopez 2010). Marcopper, allegedly, offered the *barangay* (village) leaders a set amount for each complainant they could convince to withdraw the case.

Despite residents’ and local politicians’ incessant dissent and demands from Marcopper, the company never admitted to any wrongdoing. So far, victims have only been successful in getting financial assistance from Marcopper after the disaster. The assistance, however, was not even enough to repair the flood’s

damages and victims feel that no adequate recognition of wrongdoing or compensation has been made (Coumans 1999c). With the steadfast complaints of residents over the safety of the reconstructed dam, Marcopper committed to do further repairs. However, this commitment was sidelined by a spectacular mining disaster in Marinduque in 1996. The following year, PDI divested in the mining operations and Marcopper declared bankruptcy, making it more difficult for victims to demand justice for themselves, for the environment and alleviation of their plight.

## **2.2. Valuing inclusion**

In the late 1980s up to the early 1990s, the environmental movement in the Philippines was at the identity-making phase when it was establishing its causes as separate issues from the broader mass movement (Magno 1999). In this identity-making phase of the Philippine environmental movement, Marinduque's local environmental movement already gained considerable organising experience from its earlier mobilisation in response to the slow onset mining disaster in Calancan Bay. In 1990, when Mogpog residents learned of Marcopper's plan to build the Maguila-guila Dam, the local environmental movement continued its mobilising efforts to make mineral resource governance more inclusive. Through petitions and protests, the movement endeavoured to make local residents' voices be heard by government authorities and the company. Although the dramatic mining disaster in Mogpog did not gain much attention, residents and local politicians tried to raise awareness about environmental and social impacts when the dam became operational and in the aftermath of its collapse. In 1995, the movement received support from Sr. Aida Velasquez, a leading environmentalist, and the local Roman Catholic Church who made the disaster in Mogpog known to NGOs in Canada (Coumans and MACEC 2002), the home country of PDI that partially owned Marcopper.

## **3. Abandoning Promethean positioning**

Critics of the company suggest that Marcopper has responsibility for the disaster. The local environmental movement countered Marcopper's attempt at exonerating itself by saying that the heavy rains was natural and instead suggested the inadequacy of the original dam's

design. Marcopper responded with fatalistic reasoning and, thus, abandoning its faith in technological solutions and expert knowledge that are part of Promethean positioning.

When the disaster happened, Marcopper invoked *force majeure* (an act of God), to exonerate itself from responsibility for the disaster. *Force majeure* is based on a fatalistic notion of nature due to natural hazards. Drawing from Mary Douglas's cultural theory, Swedlow described a fatalistic environmental perspective as "represent(ing) the unpredictability or capriciousness of nature; sometimes benign, resilient, or even robust or cornucopian, sometimes fragile or ephemeral, without discernable rhyme or reason" (Swedlow 2012, 159–60). This means that Marcopper decided to build the dam even if it was unsure if their design can withstand the natural hazards of the country. This behaviour, which somehow implicates the company, is consistent with the Promethean discourse's recognition of forgiving or benign nature. While a forgiving nature is different from capricious nature, the latter can be invoked usefully when events show that nature is obviously not forgiving. Capricious nature could play a role in Promethean discourse, which could still call on technological solutions to the problems that capricious nature throws at humanity.

Yet Marcopper did not call on technological solutions. Marcopper's invocation of *force majeure* based on fatalism appears to be strategic as it countered its previous pronouncement of faith in expert knowledge. This kind of strategic action seems to illustrate the limits to Promethean discourse as an explanation of developments in this case, as Marcopper abandoned Promethean positioning when it became expedient to do so. For fatalism, it is unpredictable to know if using expert knowledge, such as in engineering design, to address environmental issues may or may not work. During the proposal stage of the dam, Marcopper reassured the proposal's opponents by emphasising its use of expert knowledge in the proposal, manifesting a feature of administrative rationalism. PDI, part owner of Marcopper, brought in Canadian consulting firm Rescan Environmental Services Ltd. to conduct an environmental impact assessment (EIA) for the new San Antonio mine. EIA is an administrative rationalism tool that puts faith in expert knowledge to inform bureaucratic regulation and decision-making. In this case, EIA is technology meant to also address natural hazards in engineering dam designs. The consulting firm proposed the diversion of the Maguila-guila Creek and dump the waste rock from San Antonio mine into the creek valley (Coumans and Nettleton 2000).

Former local politicians recalled that Marcopper foregrounded their use of expert knowledge about environmental impacts as they defended the construction of Maguila-guila Dam. The town vice mayor at the time, Buenaventura M. Logdat, recalled that he strongly opposed the proposal to build a dam and dump mine waste on Maguila-guila Creek. He declared in several meetings that the proposal will result in irreversible damage to the purity of Mogpog River. An engineer himself, Logdat said his argument “was disregarded and pitted (against) the studies and presentation by the so-called experts and consultants of Marcopper” (Coumans 1999c, par 15). Logdat was referring to Rescan Environmental Services Ltd.

The local residents challenged Marcopper’s strategic use of *force majeure* based on fatalism. Whereas Marcopper considered the heavy rains unusual, locals claimed otherwise—the typhoon in question was natural for Marinduque during the rainy season (Macdonald and Southall 2005). The report for Typhoon *Monang* (international name Lola) that hit the Philippines on the day of the disaster can support the claims of residents. The information gathered by the UN Department of Humanitarian Affairs (1993) does not include Marinduque island in the worst hit area of the typhoon. The UN report indicated that the country’s worst hit area was Bicol region which does not cover the island. In fact, a day after the typhoon hit the country, the national government provided initial financial assistance to highly distressed areas, excluding Marinduque (UN Department of Humanitarian Affairs 1993).

Marcopper’s critics suggested the inadequacy of the earthen dam’s design. Coumans said the initial repairs done to the dam after the disaster are “at least a tacit recognition of the structure’s previous inadequacies” (Coumans 1999c, par 21). The 2001 findings of Klohn Crippen, Marcopper’s contracted auditor, on their evaluation of Maguila-guila Dam can support Coumans’ suggestion. The audit concluded that the reconstructed dam does not subscribe to design standards for dams to withstand the probability of strong storms that may occur each year (Macdonald and Southall 2005). Whereas this evaluation refers to the repaired dam and not the original design, this kind of construction standard speaks of Marcopper’s attitude towards dealing with risks associated to natural hazards in their mining operations.

Looking at a broad analysis of similar earthen dam collapses further strengthens questions about Marcopper’s design. The overtopping of Maguila-guila Dam that led to its collapse is the most common cause of earthen dam failures. This happens when the embankment is filled

to full capacity often due to a strong flood event and usually leads to partial or complete collapse (Sharma and Kumar 2013). “The analysis of case histories of this cause of dam failure reveals the inadequacy of formerly used hydrological methods to estimate extreme floods and the specifications for the selection of the spillway design conditions” (Sharma and Kumar 2013, 2). In the case of Maguila-guila Dam, critics may cast the same doubts on the experts’ methods and predictions that informed the dam’s engineering design, though of course experts brought in later (Klohn Crippen) reached different conclusions. Additionally, the dam did not have a spillway at all.

#### 4. Ecological reflexivity and a sudden onset mining disaster

Looking at the years of struggle of Mogpog residents since 1990 until the aftermath of the dramatic mining disaster, Marcopper’s Promethean conditioning undermined the efforts of residents and the local environmental movement in recognising environmental risks and impacts. To draw normative lessons from the case, the mining disaster in Mogpog will be analysed in two phases using the lens of ecological reflexivity. As a normative ideal, ecological reflexivity is the capacity to recognise environmental risks and impacts, rethink practices and values that contribute to these environmental risks and impacts, and respond by rethinking practices, structures, and values.

Before the disaster, residents and local politicians **recognised** the risks through *anticipation* and *monitoring*. Mogpog residents made the company and government regulators recognise the risks involved in the dam construction. However, with its Promethean conditioning, Marcopper pushed through with the dam construction, a manifestation of **anti-reflexive** behaviour. After the disaster, residents again **recognised** the risks and consequences of the toxic spill, and sent a strong message to Marcopper take action. Largely, Marcopper manifested **anti-reflexive** behaviour. There is no clear indication of rethinking by the company, although they responded to some of the residents’ demands.

##### 4.1 Before the disaster

During the planning stage of the proposal, using their knowledge of complex ecosystems, locals **recognised** the risks involved in constructing Maguila-guila Dam. Knowing the importance of political actions, they vehemently opposed Marcopper’s

plan to dam the Maguila-guila Creek by sending petitions to government authorities. Their opposition was mainly based on *anticipation*, i.e. worries over the capacity of the earthen dam to hold heavy rains during the wet season. When the dam was finished, residents also **recognised** the impact of the effluents to their environment by *monitoring* the dam and Mogpog River.

Despite local residents' recognition of risks and impacts, and their strong message to the company and government, Marcopper manifested an **anti-reflexive** behaviour. There is no clear indication of rethinking by the company and state regulators. As a local politician recalled, Marcopper expressed its faith in expert knowledge (Coumans 1999c) prior to 1991, through EIA, to bolster the strength of its proposed dam. This may indicate an adherence by Marcopper to administrative rationalism, as it applies to government that gives strong decision-making powers to administrators and experts (Dryzek 2013). However, it appeared later on that this expression of faith in expert knowledge was mostly strategic, in the same way that technocracy can be corrupted by the financial interests of private companies especially when they have considerable control of environmental knowledge production (Kirsch 2014; Hatcher 2012). After the disaster, Marcopper countered its faith in expert knowledge when it invoked *force majeure* based on fatalism as a way to exonerate itself from responsibility for the disaster. This transition indicated that Marcopper's Promethean conditioning was less than complete. Marcopper would strategically invoke administrative rationalism, even if not deployed properly, so long as it could continue its mining operations. My analysis here was influenced by Hajer's discourse analysis of the acid rain issue in Netherlands. He described the environmental discursive space to have different chambers (in his case, chambers of concern and regulation, respectively), where each chamber can be dominated by a different discourse or set of practices (Hajer 1997). In this case, Marcopper's discursive space had one chamber dominated by administrative rationalism when it was engaging with the dam proposal's critics, and another chamber dominated by the Promethean discourse (along with evasive practice) when it prioritised the growth of its operations at the expense of properly deploying the elements of administrative rationalism.

Marcopper's behaviour brings to light a broader issue with EIA practices in the Philippines. Whereas EIA can be inclusive of diverse knowledges, it is often

hierarchical and puts formal expert knowledge at the top. The implementing rules of the Philippine Environmental Impact Statement System at the time indicate mechanisms that can be inclusive of diverse knowledges, aside from formal expertise. In the preparation of environmental assessment and application for environmental compliance certificate, proponents need to publicly disseminate information regarding the project, solicit comments from government agencies, conduct a public hearing, reply to comments from government agencies and stakeholders, and get substantive review by the EIA review committee (Tuyor et al. 2007). The Environmental Impact Statement (EIS) for the San Antonio mine indicates a **recognition** of environmental issues by Marcopper in their operations (Rescan Environmental Services, Ltd. 1989).

Undertaking the EIA process manifests a general *awareness* of the environmental impact of mining. Marcopper would also *anticipate* and *monitor* environmental issues as part of the environmental management plan to minimise negative effects. The EIS also assured that the “concerns expressed by local residents and regulatory agencies will be fully addressed” (Rescan Environmental Services, Ltd. 1989, ii). If EIA were deployed properly, it could recognise and manage environmental risks and impacts.

Some critics of the EIA process in the Philippines, however, describe it as focused on technical and expert knowledge, and as a perfunctory bureaucratic exercise. Bravante and Holden view EIA for mining in the country as “tokenism designed to make it appear that mining projects are being assessed for their environmental effects while they receive their inevitable predetermined approval” (2009, 523). Also, the process does not carefully account for biodiversity, ethnodiversity, alternatives to the project, and the cumulative effects of the project (Bravante and Holden 2009). These criticisms pertain to the formal government procedure; civil society groups conduct environmental investigative missions (Camba 2016; Nem Singh and Camba 2016) to counter the exclusionary and perfunctory tendencies of the formal EIA process. But these have no clear link to policy making.

The criticisms to the EIA process resonate with the planning of Maguila-guila Dam. In the case of Marcopper’s meetings with stakeholders about the proposed dam, the recollection of local politicians indicates the company’s strong belief in expert knowledge that can exclude other knowledges. Whereas the EIS of Marcopper claims recognition of environmental impacts of mining and having mechanisms in place to

anticipate and monitor environmental issues, these mechanisms were not carried out effectively.

#### 4.2. After the disaster

When the disaster happened, the dramatic events became an impetus to seriously **recognise** environmental risks and the consequences of Marcopper's operations. For affected residents with knowledge of complex local ecosystems and the importance of legal action, their *awareness* bolstered them to make justice claims for what they believe is the responsibility of a company for the environmental and social costs of the disaster. Marcopper, however, exonerated itself by claiming that the heavy rains that caused the dam collapse was unusual. This signalled a shift for Marcopper to be able to disregard environmental consequences. Despite not claiming any wrongdoing, Marcopper became *aware* of the unfortunate plight of residents. It is unclear if there was rethinking on the part of Marcopper but, after incessant demands from residents, the company responded by extending financial assistance to victims. This assistance, though, is meagre, according to the residents (Macdonald and Southall 2005), and by any objective standard because, for example, the amount of money given is far less than the value of the damaged properties.

Later on, through *monitoring*, residents **recognised** the continuing risks of the spill and the reconstructed dam to their lives and properties. They demanded that the company should remove the dam and waste rock dump, and rehabilitate the Mogpog River. It is unclear if the company did a serious rethinking of the issue, but they responded by committing to do further repairs on the dam. If indeed Marcopper fulfilled its promise of making further repairs, it seems like they were inadequate, as implied by the findings of the 2001 audit of Klohn Crippen that the dam is still a serious threat to life and property.

Overall, local residents and their supporters were the most ecologically reflexive actors before and after the disaster. They actively recognised the risks involved with the construction of the dam and the eventual toxic spill into Mogpog River. Often, the company is made aware of the risks through the strong messages of Mogpog residents. However, there is little to suggest that Marcopper proceeded to rethinking and response.

A lesson from the 1993 sudden onset mining disaster in Mogpog is that if local residents' fears were seriously considered, perhaps less risky alternatives to the proposal were pursued that could have averted the tragic event from happening. It is not surprising that a corporation like Marcopper is anti-reflexive. But perhaps, corporations can be moved in a reflexive direction with prolonged and consistent prodding from actors like experts and vulnerable groups.

The clear environmental signal of non-human nature, i.e. the destructive flood, by itself was not enough to generate reflexivity from Marcopper and national government. Other actors needed to amplify non-human nature's environmental signals. The residents' recognition of environmental risks and impacts highlights the important contribution of vulnerable groups in ecological reflexivity. Dryzek and Pickering identify "the most vulnerable" as an important group, among others, in cultivating ecological reflexivity because they "have moral authority precisely because they are the ones upon whom the burden of risks falls most heavily" (Dryzek and Pickering 2019, 123). Using their local environmental knowledge, residents recognised the risks involved in dumping mine waste rock on a creek valley, damming it, and diverting the natural flow of the creek. Given that most residents are fisher folk and farmers who depend on the Mogpog River, they must consider themselves highly vulnerable if a natural hazard struck the earthen dam and waste rock dump, unleashing a disaster. Mogpog residents' intimate relationship with the river gives them an acute sensitivity to the risks involved in damming part of the head waters of Mogpog River and filling it with mine waste rock. To avert an impending disaster, locals pushed for the inclusion of their local environmental knowledge by opposing the proposal not only for the sake of risks to the environment but also for their safety and livelihoods. When the dam was completed, residents continued to monitor the impacts of mine waste seepage to Mogpog River. To avert the occurrence of another disaster, they observed the impacts of the tailings spill and the integrity of the repaired dam structure.

## **5. Chapter conclusion**

From the slow onset mining disaster in Calancan Bay to the sudden onset mining disaster in Mogpog, Marcopper's anti-reflexive behaviour is consistent with the Promethean discourse. While these two disasters look very different in that one is deliberate and slow onset, the other

more accidental and dramatic, the outcomes are similar. **I argued that Marcopper's Promethean behaviour undermined the local environmental movement's green politics and their efforts to push for ecological reflexivity.** While it is not surprising that a corporation like Marcopper is conditioned by Promethean discourse and behaves in anti-reflexive fashion, the 1993 mining disaster illustrated that vulnerable groups like poor mining-affected residents can contribute in efforts to move corporations towards a reflexive direction by amplifying signals from non-human nature.

In the next chapter, I will discuss discursive tensions in newer environment-related policies in the Philippines, with a view to determining whether that changed anything in terms of the prospects for effective response to disasters. The language of sustainable development became prominent in Philippine policies in the late 1980s and 1990s. But a new mining law in 1995 reinforced the Promethean conditioning of the interests of the state.

## Chapter 7

### Promethean discourse overrides sustainable development in national mining policy

(1986-1995)

In the previous two chapters, we saw that the Promethean conditioning of Marcopper Mining Corporation's interests led to the slow-onset mining disaster in Calancan Bay and the dramatic mining disaster in Mogpog. Amid these disasters, the Philippine state adopted the sustainable development discourse in policy statements, beginning in the late 1980s. The state adopted the Brundtland report's description of sustainable development—that economic development, environmental protection, and social justice can be mutually reinforcing. As embedded in policy statements, sustainable development sounded like good news for mining-affected communities, as the discourse can potentially veer away from mining disasters by at least recognising the equal importance of environmental and social factors in relation to economic development. However, similar to the Brundtland report, the Philippine state's sustainable development strategy (Department of Environment and Natural Resources [DENR] 1990) does not specify in detail how exactly economic development, environmental protection, and social welfare can be mutually reinforcing. I look at the impact of sustainable development on mining policy statements with a focus on the Philippine Mining Act of 1995. One of the important features of this mining law is its neoliberal intent (reflecting the global history of entanglement of sustainable development and neoliberalism). For example, it allows fully foreign-owned mining companies to operate in the country through a Financial and Technical Assistance Agreement. This policy is part of the state's mining-based development strategy.

In this chapter, **I argue that the Promethean discourse, consistent with some neoliberal features, overrides sustainable development in mining policy statements.** This argument highlights the environmental dimension of the political economy analysis of the tension between sustainable development and neoliberalism in Philippine mining. Even though sustainable development can be distorted to suit the neoliberal logic, in this thesis, sustainable development is considered conducive to the public good in a way that is distinct from neoliberal rationality. The apparent commitment to sustainable development proved

superficial. If mining policy statements would be any indication, what appears in reality is the primacy of economic development over environmental protection and social welfare. The first implementing rules (DENR Administrative Order No. 23, s. 1995) of the Philippine Mining Act of 1995 refer to sustainable development in its objectives. However, the policy is largely configured around mining-based national development, which indicates the domination of the Promethean discourse with its commitments to economic growth and the recognition that resource scarcity and environmental problems can be overcome using modern technology.

### **1. Overview of environmental policies and a new mining law: findings of political economy scholarship**

Since the 1980s, sustainable development entered the language of environmental policy texts in the Philippines, including new mining policies. The Brundtland report's vision of sustainable development that reconciles the economy, society, and nature, clashes with the strong pro-growth goal of the new mining law.

Philippine government efforts to incorporate sustainable development discourse in policies began as early as 1987 when the newly-reorganised DENR began the formulation of the Philippine Strategy for Sustainable Development (PSSD). After consultations and workshops, a PSSD conceptual framework was drafted and approved pending some modifications by a cabinet resolution in 1989. The PSSD conceptual framework clearly stipulated the discursive shift in Philippine environmental policy. Quoting the UN's Brundtland Report, the PSSD defined sustainable development as "meeting the needs and aspirations of the people without compromising the ability of future generations to meet theirs" (DENR 1990, 5). The rationale of the framework highlights the prominence of sustainable development and states that sustainability cannot be achieved with pollution control alone (DENR 1990, 1):

One of the more revealing lessons learned during the past two decades of environmental awakening in the Philippines is that the maintenance of the earth's delicate balance by the mere prophylactics of pollution control and other ecological mitigation measures cannot ensure sustainable development. There is now a compelling need to overhaul the traditional concepts of development, with its exclusive focus on economic principles and the political economy of natural resources.

With the country's increasing population and various costs of environmental degradation to the economy, politics, society, and ecology, the Strategy recommended that the Philippines should turn to sustainable development. The PSSD conceptual framework calls it "true" development (DENR 1990, 4) that emphasises the compatibility between environmental protection and economic growth. The framework drew the implication that in sustainable development, the economy, society, and nature are mutually reinforcing. The guiding principles of the sustainable development framework can be compatible with the discourse's requirements (multiple knowledges and cooperative governance) towards sustainable economic growth. The PSSD calls for (DENR 1990, 5):

- a systems-oriented and integrated approach in the analysis and solution of development problems;
- a concern for meeting the needs of future generations, otherwise termed as inter-generational equity;
- a concern for equity of people's access to natural resources;
- a concern not to exceed the carrying capacity of ecosystems;
- living on the interest rather than on the capital or stock of natural resources;
- maintenance or strengthening of vital ecosystem functions in every development activity;
- a concern for resource use efficiency;
- promotion of research on substitutes, recycling, exploration, etc. from revenues derived from the utilisation of non-renewable resources;
- a recognition that poverty is both a cause and consequence of environmental degradation; and
- promotion of citizens' participation and decentralisation in implementing program.

Mining policies also reflected the influence of the sustainable development discourse. Sustainable development is mentioned in the objectives of the first implementation rules of the Philippine Mining Act of 1995. However, despite provisions for environmental protection and social welfare, the law is primarily configured for economic growth. Therefore, in mining policy, there is tension between sustainable development and the primacy of pursuing economic growth in the new mining law.

This tension can be understood in light of political economy analysis of Philippine mining. Policies in Philippine mining since the late 1980s have been characterised with neoliberal features (Holden and Jacobson 2012; Camba 2015). As a broad concept, ‘neoliberalism’ espouses a fervent faith in free markets and believes in reducing trade barriers in favour of openness and competition; in Philippine mining, the neoliberal character of the sector mainly refers to permitting foreign entities to invest and operate more freely in the country (Holden and Jacobson 2012; Camba 2015).

The neoliberalisation of mining policies began in the administration of President Corazon Aquino’s administration (1986-1992). In 1987, Aquino issued Executive Order No. 279 (EO 279), a transitional law, that changed mineral land management from the leasehold system to production sharing agreement, co-production, joint venture and financial or technical assistance agreements (FTAA) with foreign owned corporations. This change, in some ways, enabled more government control over mining operations. However, the FTAA also allowed foreign owned mining companies, by themselves, to gain access to mineral lands by entering into agreements with the government. Previously, mining companies need to be at least sixty per cent Filipino-owned to be eligible to apply for a mineral leasehold. At the same time, sustainable development strategies made an appearance. Whereas the main thrust of EO 279 was not in promoting sustainable development in mining, its implementation involved a series of administrative orders and other rules that stipulated provisions for progressive rehabilitation, environmental protection and industrial health, social development of mining communities, and geosciences and mining technology development (Cabalda et al. 2002), that can be seen as supporting Philippine sustainable development strategies.

The pursuit of neoliberal policies in mining continued. The transitional mining law led to a proposed mining bill in 1988 meant to invigorate the industry, which was performing poorly in the early 1980s (Camba 2015; Lopez 1992). Then, the proposed mining bill led to the consolidated bill authored by then Senator Gloria Macapagal-Arroyo and enacted on March 3, 1995 as the Mining Act of 1995 or Republic Act No. 7942 (RA 7942). At the same time, RA 7942 has provisions that reflect the influence of sustainable development that diverges from the previous 1974 mining regime. In Chapter 4, despite the introduction of the limits discourse in Philippine policies, the Mineral Resources Development Decree of 1974 still reflected Promethean assumptions. The opening text of PD 463 declares that “mineral production is a major support of the national economy, and therefore the intensified discovery,

exploration, and development and wise utilization of the country's mineral resources are urgently needed for national development" (*Mineral Resources Development Decree* 1974, par 1). The strong emphasis on economic development in 1995 now included ideas compatible with the sustainable development discourse, i.e. economic growth, environmental protection, cooperation, and rights protection. RA 7942's opening text declares the State's responsibility "to promote their (mineral resources) rational exploration, development, utilization and conservation (of mineral resources) through the combined efforts of government and the private sector in order to enhance national growth in a way that effectively safeguards the environment and protect the rights of affected communities" (*Philippine Mining Act* 1995, Sec. 2).

Some scholars observed that sustainable development more generally (not just in the Philippines) had been co-opted by big business (Bowen 2014; Dauvergne 2016; Cléménçon 2012) which can make sustainable development appear at core to be consistent with neoliberal logic, e.g. removing restrictions on foreign capital. This thesis acknowledges these findings and the distortion of sustainable development by big business. However, in this chapter, sustainable development is understood as suitable for a conception of the public good which is in keeping with Brundtland's vision. Below, the environmental discourse approach not only highlights the environmental dimension of the political economy analysis of Philippine mining policies in the 1980s and 1990s, but also demonstrates how sustainable development is considered conducive to the public good in a way that is distinct from neoliberal rationality.

Even though sustainable development is susceptible to abuse, Dryzek and Pickering (2019) contend that a useful concept such as sustainability should not be abandoned just because it is abused by some. To counter this abuse, they proposed reclaiming sustainable development by paying attention to its ecological and social dimensions (Dryzek and Pickering 2019).

## **2. Sustainable development discourse**

The 1970s saw the Philippine state adopt the limits and administrative rationalism discourses in its policies in adherence to international norms and conventions (Marcos 1977; Gilpin 1995). In the late 1980s, an explicit shift towards the sustainable development discourse in Philippine policies happened after the release of the 1987 Brundtland Report *Our Common*

*Future* that popularised the discourse. The report was the outcome of an independent commission initiated by the United Nations in 1983 and led by Former Norwegian Prime Minister Gro Harlem Brundtland. Unsurprisingly, the Philippine Department of Environment and Natural Resources quoted the Brundtland Report's in its definition of the discourse in the department's sustainable development strategy framework.

The sustainable development discourse is imaginative and reformist. It departs from the limits and administrative rationalism discourses which are prosaic in so far as the economy and the environment are taken as at odds with each other. Sustainable development has an imaginative take by seeing a potentially harmonious relationship between the environment and the economy. Economic growth, environmental protection, distributive justice, and long-term sustainability can mutually reinforce each other in the sustainable development discourse. Sustainable development is unlike the limits discourse's radicalism that prescribes a serious curbing of consumerism. Rather, sustainable development is reformist, like administrative rationalism, in so far as its commitment to sustainability weakens the doomsday projections of the limits discourse and inhibits a radical edge (Dryzek 2013). Sustainable development does not aim to transform the socio-economic status quo, i.e. the pursuit of perpetual growth, but aims to find ways within the current dominant system to achieve sustainability. In her foreword to the report, Brundtland made this reformism explicit: "What is needed now is a new era of economic growth - growth that is forceful and at the same time socially and environmentally sustainable" (1987, par. 5).

Sustainable development discourse generally welcomes multiple knowledges and cooperative governance. These requirements related to sustainable development's imaginative and reformist dimensions. Brundtland's "vision of the simultaneous and mutually reinforcing pursuit of economic growth, environmental improvement, population stabilization, peace, and global security" (Dryzek 2013, 150–51) calls for an open and plural knowledge production. Given that multiple knowledges are essential to achieve sustainability, cooperative governance involving those with different sorts of knowledge is also prized in the sustainable development discourse. However, sustainable development is only reformist and so it can be expected to augment the dominant political economy system, e.g. liberal capitalism, with a sustainability agenda, but not radically transform the system. More explicitly than the reformism of environmental-problem solving discourses, sustainable development prizes continuous growth. Like the limits discourse, sustainable development can recognise

ecological limits, but these limits are treated as capable of being extended with appropriate policies, making perpetual economic growth possible (Dryzek 2013). But its pursuit of economic growth is unlike the individualism of the Promethean discourse because sustainable development requires cooperative efforts. Cooperative governance is likely because the discourse has reformist goals that can potentially enjoin many actors.

Brundtland's enticing vision was not accompanied by concrete ways to achieve sustainable development's imaginative and reformist goals. In succeeding UN conferences on the environment, efforts were made towards making the discourse have a practical bite, for example, by specifying principles, targets, or mechanisms. As sustainable development is continuously being reshaped in these meetings, business interests (such as the World Business Council for Sustainable Development) have strategically positioned themselves as major players in promoting sustainable development, but in ways that secure their own interests.

## **2. Sustainable development in Philippine policies**

As a policy statement, the adoption of sustainable development in Philippine policies can be considered a positive thing for environmental governance. However, the state's sustainable development strategy does not clearly show how exactly the areas of economic growth, environmental protection, and social welfare can mutually reinforce each other. What is apparent are strategies and other policies that can be pursued in each area, but it is not clear how each is positively linked to the others. The 1990 PSSD framework's principles suggest open knowledge production and cooperation to achieve sustainability. For example, a systems-oriented and integrated approach and research promotion on sustainable technologies suggests diverse sorts of knowledge are relevant. Cooperation is suggested in citizens' participation and decentralisation, and in considering equitable natural resource access. The sustainability goal is reflected in inter-generational equity, considering keeping consumption within ecosystems' carrying capacity, preserving natural resource capital or stock, preserving or reinforcing ecosystem functions for development, considering efficient resource use, and recognising environment problems as an effect of poverty.

The framework's principles inform the strategies that include the following:

- integration of environmental considerations in decision-making;
- proper pricing of natural resources;

- property rights reform, establishment of an integrated protected areas system;
- rehabilitation of degraded ecosystems;
- strengthening of residual management in industry (pollution control);
- integration of population concerns and social welfare in development planning; and
- strengthening of citizens' participation and constituency building.

These strategies, though, are not exclusive to sustainable development, but can also be found in other environmental discourses which also contain contrasting elements to sustainable development. For example, proper pricing would also be found in a market-oriented, problem-solving discourse of economic rationalism. These strategies were translated into policies that provide mechanisms for sustainable development's requirements. Like previous environmental policies, an executive order was issued that adhered to the commitment of the country to international norms and agreements, specifically, the Agenda 21 principles of the 1992 Rio Declaration and the UN Framework Conventions on Climate Change and Biodiversity. The order promoted cooperative governance and citizen participation, though perhaps in a limited sense, and a commitment to sustainable economic growth. Shortly after Fidel V. Ramos was sworn in as the country's president, he continued the Aquino administration's pursuit of sustainable development. On September 1, 1992, Ramos issued Executive Order No. 15 (EO 15), *Creating a Philippine Council for Sustainable Development*. This policy created a focal group for cooperative governance for sustainable development. The Council is composed of representatives from government and private sectors for building consensus on sustainable development. The commitment to economic growth with a sustainability agenda is manifest in the Council's leadership. The designated chair is the Director-General of the National Economic and Development Authority (NEDA); vice chair is the Secretary of the Department of Environment and Natural Resources (DENR); and members come from from fourteen other government departments. A form of citizen participation is promoted with the inclusion of seven representatives from the civil society sector to be chosen by non-government organisations who will determine the selection process by themselves, taking into account dedication to the environment, gender equality, and sectoral interests (*Executive Order No. 15 1992, Sec. 1.3*).

For the strategy of integration of environmental concerns into policy making, the PSSD framework turned to administrative rationalism tools, such as natural resource accounting,

environmental impact assessment, and land use planning. Whereas the PSSD document acknowledged the insufficiency of administrative rationalism tools alone to promote sustainable development, the framework still adheres to using these tools provided they are strengthened and better placed. Sustainable development and administrative rationalism discourses are somehow aligned in so far as they are both reformists and can be compatible with the dominant political economy system they are in. In particular, environmental impact assessment (EIA) can be seen as “crucial in facilitating (the) sustainability objective” (Ingelson, Holden, and Bravante 2009, 4), insofar as the process is open to various knowledges, values, and actors. On EIA strengthening, Ramos issued Executive Order 291, *Improving the Environmental Impact Statement System*, on January 12, 1996. Some system improvements are: the early integration of EIA in the project cycle and enhancing government capacity to review environmental impact statements (EIS). EO 291 explicitly mentions: “Proponents are urged to use simultaneous conduct of the environmental impact study and the feasibility study as a planning tool, with the end in view of minimizing or managing adverse environmental impacts of the proposed activity” (*Executive Order No. 291 1996*, Sec. 2). This conduct of EIA in the very early stages, prior to project development, is an improvement compared to the absence of any temporal indication in PD 1151 that originally required EIS for development projects: “prepare, file and include in every action, project or undertaking which significantly affects the quality of the environment a detail (environmental impact) statement....” (*Executive Order No. 291 1996*, Sec. 4). On improving bureaucratic capacity to review the EIS, EO 291 stipulated that one way to achieve this is to expand the membership of the EIA Review Committee (*Executive Order No. 291 1996*, Sec. 4). This is important to ensure the effective verification of EIS quality and accuracy.

Other policy fronts featured other sustainable development strategies. On property rights reform, a major policy outcome was DENR Administrative Order No. 02 (DAO 02) issued on January 15, 1993. DAO 02 further formalised the constitutional recognition of indigenous cultural communities in relation to their ancestral lands. Later, this was strengthened by the passing of the Indigenous Peoples’ Rights Act of 1997. On the integrated approach towards protecting ecologically significant areas, the National Integrated Protected Areas System (NIPAS) Act of 1992, was passed. The NIPAS Act recognises that ecologically important areas have varied features that may be integrated into a holistic plan; that the administration of these special areas needs the cooperation of national and local governments, and private organisations; and that the use of these areas shall conform to biological diversity and

sustainable development principles (*National Integrated Protected Areas System Act 1992*, Sec. 2). On incorporating population issues and social concerns in development, Ramos included poverty alleviation in the 1993 Medium-Term Philippine Development Plan (MTPDP) or “Philippines 2000”. The following year, Ramos also launched the Social Reform Agenda (SRA) that accompanied the MTPDP. The two programmes were aligned in addressing poverty issues. The MTPDP endeavours to accelerate economic growth that is assumed to benefit the poor through trickle down effects; the SRA aims to increase opportunities for the lower class to alleviate their conditions (Raquiza 1997). Strengthening citizen participation, the promotion of decentralisation was established on October 10, 1991 with the approval of the Local Government Code of 1991.

The various policies illustrate the ways in which the state could complement the sustainable development strategies. Through the sustainable development discourse, knowledge production tends to be more diverse. Besides industrial, technical, or economic knowledge, the discourse can include environmental awareness, lay knowledge, and indigenous knowledge. EO 15 that created the sustainable development council specifically stipulates the participation of civil society representatives, which can open decision-making to be informed by environmental awareness and lay knowledge. EO 291 that strengthened the implementation of the environmental impact statement system stipulates the production of environmental knowledge beyond industry expertise. EO 291 aims to improve bureaucratic capacity to review the findings of industry experts in environment impact statements. Indigenous knowledge can also inform environmental decision-making with the reiteration of indigenous communities’ constitutional rights to their ancestral territories in DAO 02 and the Indigenous Peoples’ Rights Act. Unsurprisingly, a likely associate of the production of multiple knowledges is cooperative governance. EO 15 calls for the cooperation of various sectors and the representation of civil society sectors in the sustainable development council. The Local Government Code of 1991 stipulates the cooperation of government and non-government sectors in protected areas management. More broadly, citizen participation is promoted through decentralised governance as stipulated in RA 7160.

The sustainable development strategies and complementary policy statements can support areas of economic growth, environmental protection, and social welfare. But some of these policies are underpinned by competing environmental discourses, so the question remains as to how tensions can be overcome towards mutually reinforcing relationships.

### 3. Discursive tensions in Philippine mining policy

Mining policies also reflected the influence of the sustainable development discourse. Sustainable development is mentioned in the objectives of the first implementation rules of the Philippine Mining Act of 1995. However, mining policy statements in the Philippines have been long underpinned by the Promethean discourse. Despite provisions for environmental protection and social welfare, the neoliberal framing of the Mining Act of 1995 makes the law primarily configured for economic growth, that is consistent with the Promethean discourse. Therefore, in mining policy, there is tension between sustainable development and the Promethean discourse, with the latter in a strong position to undermine the former.

Without specific ways to determine how each of the three areas of growth, environmental protection, and community rights can mutually reinforce each other, it is unclear if sustainable development can be promoted. To complicate this further, the law in its entirety is primarily configured around economic growth underpinned by the Promethean discourse.

There are other provisions in RA 7942 that promote economic growth, environmental protection, and social welfare. However, some of these strategies are also consistent with other environmental discourses that can have competing elements with sustainable development, as I will show below. The law reiterates some of the strategies outlined in the 1990 Philippine Strategy for Sustainable Development. On environmental integration, the law stipulates environmental protection provisions at every stage of mining operation. As mentioned above, environmental integration meant a strengthening of some administrative rationalism tools. For example, EIA should be introduced in the early stage, during mine exploration (DENR and UPLB CFRN 2011). The contractor's application comes with a work program that should include "aquaculture, watershed development" and "water conservation" (*Philippine Mining Act 1995*, Sec. 69). The proponent is also required to conduct a complete ecological profile of the proposed mining area as part of the EIA process (*Philippine Mining Act 1995*, Sec. 70).

On property rights reform, the law upholds the constitutional rights of indigenous communities to their ancestral lands (*Philippine Mining Act 1995*, Sec. 4), a provision that can

complement the indigenous sustainability discourse. Further, ancestral lands can only be opened for mining operations if there is prior consent from the indigenous community concerned (*Philippine Mining Act 1995*, Sec. 16). In case consent is given by an indigenous community for mining, royalty payments shall be accorded to the community for their socio-economic development (*Philippine Mining Act 1995*, Sec. 17). These provisions would later complement the enactment of the Indigenous Peoples' Rights Act of 1997 that bestowed specific rights to state-recognised indigenous communities on their self determination, ancestral territories, and rights protection.

The law also stipulates the rehabilitation of degraded ecosystems, in this case mined out areas, consistent with sustainable development. When a contractor applies for a permit or agreement, the law requires a work program that includes “rehabilitation, regeneration, revegetation and reforestation of mineralized areas” and “slope stabilization of mined-out and tailings covered areas” (*Philippine Mining Act 1995*, Sec. 69). The provision of a mine rehabilitation fund is meant to ensure having resources for rehabilitation work (*Philippine Mining Act 1995*, 71).

The law supports another sustainable development strategy, the establishment of an integrated protected areas system. RA 7942 stipulates prohibition of mining in protected areas under the NIPAS or RA 7586 and its implementing rules and regulations (*Philippine Mining Act 1995*, Sec. 19.f). This law is perhaps more consistent with preservationist green discourse than with sustainable development.

On the strategy of strengthening of residuals management in industry (or pollution control), the law provided financial incentives to encourage such control. Pollution control devices and related expenses to their development or installation would not be considered as land or building development and not subject to real property taxes and other assessments (*Philippine Mining Act 1995*, Sec. 91). This provision is on top of other pollution control measures, such as fees for and suspension or closure of pollution activities. The imposition of a mine waste and tailings fee was intended to compensate for lives and personal safety and damages to livelihoods (*Philippine Mining Act 1995*, Sec. 85).

On the integration of social welfare in development planning, the mining law, in part, supports this sustainable development strategy through community development, local employment,

and human resource development. The law specifies that a mining contractor shall aid in the development of host and adjacent communities of a mining operation (*Philippine Mining Act 1995*, Sec. 57, 58.a). The contractor is also required to prioritise the hiring of Filipinos in mining employment, though the hiring of foreign staff is still possible under certain conditions (*Philippine Mining Act 1995*, Sec. 62). A mining contractor is required to take part in the development of science and mining technology, including institutional and human resource development (*Philippine Mining Act 1995*, Sec. 57, 58.b, 59).

RA 7942 supports the strategy of strengthening of citizens' participation and constituency building in environmental decision-making. As mentioned above, the law requires the consent of indigenous communities in case a contractor intends to propose a mining operation within an ancestral territory. The law also requires EIA processes to include consultation with local government units, nongovernmental and people's organisations and other relevant community sectors (*Philippine Mining Act 1995*, Sec. 70). Further, the law allows and promotes the participation of people's and nongovernmental organisations in ensuring that contractors follow environmental protection requirements (*Philippine Mining Act 1995*, Sec. 70).

One strategy for sustainable development where the law can be questioned is on the proper pricing of natural resources. RA 7942 upholds the government share in the form of excise tax on mineral products in accordance with the Excise Tax Act of 1994 or Republic Act No. 7729 (*Philippine Mining Act 1995*, Sec. 80). RA 7729 decreased the fixed tax rate of mineral products to two percent from the previous five percent (Cabalda et al. 2002). Aside from the decreased excise tax, contractors can also gain other incentives—as investors, through various tax cuts, and for the development of pollution control devices, as mentioned above (*Philippine Mining Act 1995*, Sec. 90-93). These economic gains for the industry, to the detriment of the Philippine state's economic share in mineral products, are the basis for some of the criticisms to the mining law (Tujan and Guzman 2002). The industry's counter-argument is that they contribute other benefits to the Philippine economy, aside from the excise tax. For example, mining companies cite their contribution to employment generation and tax and the mining operation's consumption that fuels economic activity within and beyond their site (Lopez 1992). Besides, the law also requires mining companies to spend a portion of their operational expenses on the development of communities, human resources, and geosciences and mining technology research.

Philippine mining policy statements since 1986 have included the language of sustainable development. Some provisions can support the areas of economic growth, environmental protection, and social welfare. But whether they can reinforce each other, as required by the sustainable development discourse, remains to be seen. This can be challenging not only with tensions between sustainable development and the Promethean underpinning of neoliberal mining, but with other environmental discourses as well.

#### **4. Promethean discourse undermines sustainable development in mining**

The adoption of the sustainable development discourse in Philippine mining partially contradicts the Promethean influence in the Mining Act of 1995's mining-based development strategy. With the influence of the sustainable development discourse, the 1995 Mining Act's language is reformist in environmental and social terms, and is imaginative in its reconciliation of environmental and economic concerns. Sustainable development is unlike the other discourses in previous chapters where certain knowledges and knowledge producers were being privileged in Philippine mining. The Promethean discourse foregrounded technical knowledges (like engineering and geology) and privileged industrial mining experts in so far as they can devise actions to overcome scarcity and environmental constraints. This knowledge production largely excluded the knowledge of environmentalists and mining-affected communities. The limits discourse privileged ecological knowledge and scientific experts, and being a counterpoint to the Promethean discourse, largely excluded the knowledge of industry experts and managers. The administrative rationalism discourse foregrounded the technical and administrative knowledges of experts and bureaucrats, and largely excluded local environmental knowledge of mining-affected communities. In contrast to these discourses, the imaginative dimension of sustainable development, when applied to mining, joins knowledges from various actors such as scientists, bureaucrats, managers, engineers, development workers, mining-affected communities, and environmentalists, among others.

While the Mining Act has provisions that can support the areas of economic growth, environmental protection, and social welfare, the motivations that led to the passage of the law were part of the political environment promoting neoliberalism, i.e. a fervent faith in free markets and reducing trade barriers in favour of openness and competition. Since 1986, the Philippine state increasingly adopted neoliberal mining policies that promoted large-scale

mining and foreign direct investment as major development strategies (Chaloping-March 2014; Camba 2015). The push for changing mining laws in the Philippines in a neoliberal direction was part of a global trend. From the 1980s to the 1990s, resource-rich countries focused on attracting foreign direct investments through competitive fiscal regulation in mining (Chaloping-March 2014). In the 1990s, the World Bank was one of the international financial institutions that was instrumental in reforming the mineral sector in developing countries and countries transitioning to market economies (Onorato, Fox, and Strongman 1998). These reforms included changing their mining legislation. From 1985 to 1995, over ninety countries either passed new mining legislations, extensively revised their mining laws, or were drafting new mining laws that align with neoliberalism (Camba 2015; Chaloping-March 2014). Policy changes included streamlining the permitting process and making taxation rules more attractive to investors. (Chaloping-March 2014).

The Philippines took part in this global trend of neoliberalising mining through legislation, in part as a response to the country's mining crisis in the 1980s that saw shrinking investments and profits in mining (Lopez 1992). When Corazon Aquino signed EO 279 in 1987, this allowed fully foreign-owned mining companies to operate in the country through financial and technical assistance agreements with the government. In 1989, high-ranking Philippine officials attended the seminar "Prospects for the Mining Industry to the Year 2000", organised by the United Nations Department of Technical Cooperation and Development. Philippine representatives were Guillermo Balce, director of the Mines and Geosciences Bureau (MGB), and Michael Cabalda, chief science research specialist of the MGB (Holden and Jacobson 2013). The World Bank attended the same seminar and clearly promised to provide support for borrower countries who will reform their mining legislation towards better access to mineral lands, easing restrictions to foreign investments in mining, and providing tax breaks and other incentives to mining companies (Rovillos, Ramo, and Corpuz 2004). In a 1994 Mineral Sector Study by the Asian Development Bank (ADB), the regional financial institution attributed the decline in Philippine mineral production, in part, to the unfavourable investment situation in the country. Echoing the World Bank, the ADB suggested that the maximum forty percent share in a mining ventured allowed for foreign investors should be scrapped, and mining companies should be accorded tax holidays, full repatriation of profits, and other fiscal incentives and guarantees (Rovillos, Ramo, and Corpuz 2004). The following year, Ramos signed the Mining Act of 1995 that reiterated provisions in Aquino's EO 279 that

permitted foreign capital to operate more openly in the Philippines. As mentioned in the previous section, the law also provides tax breaks and other incentives to mining companies.

With those pressures from international financial institutions to establish neoliberal mining policies, it is not surprise that the Mining Act of 1995 is largely structured around neoliberalism. Therefore, the adoption of sustainable development became superficial as the Promethean discourse aligns more with neoliberal mining. Neoliberalism shares with Promethean discourse a faith in capitalist markets as the best way to mobilise human creativity in the interests of economically efficient resource exploitation.

### **5. Chapter conclusion**

The Mining Act of 1995 included provisions about sustainable development but at the same time the Act strengthened neoliberal features in Philippine industrial mining. There is tension between the two discourses. But the adoption of sustainable development proved superficial. In this chapter, **I argued that despite the state's adoption of sustainable development ideas, the Promethean discourse dominated in mining policy, drawing sustenance from neoliberalism.**

Broader discursive trends involving sustainable development could not, then, shake the dominance of Promethean discourse that meant environmental risks continued to be downplayed. Could spectacular do better in shaking up the system? In the next chapter, I will discuss the case of a spectacular mining disaster in 1996 in Boac River.

## Chapter 8

### **Promethean conditioning and a spectacular mining disaster: The case of Marcopper and Boac River**

In the previous chapter, I showed how the Philippine state adopted the sustainable development discourse in policy statements beginning in the late 1980s. The state adopted the Brundtland report's imaginative conception of sustainable development—that economic development, environmental protection, and social welfare can be mutually reinforcing. Similar to the Brundtland report, the Philippine Strategy for Sustainable Development document (Department of Environment and Natural Resources [DENR] 1990) does not specify in detail how exactly economic development, environmental protection, and social welfare can be mutually reinforcing. Yet this apparent commitment to sustainable development proved superficial. If mining policy statements would be any indication, what appears in reality is the prominence of economic development over environmental protection and social welfare, as Philippine mining adopts a neoliberal logic, i.e. a fervent faith in free markets and reducing trade barriers in favour of openness and competition. The first implementing rules (DENR Administrative Order No. 23, s. 1995) of the Philippine Mining Act of 1995 refer to sustainable development in its objectives. However, the policy is largely configured around mineral resource development, which indicates the domination of the Promethean discourse with its commitment to economic growth that is consistent with key neoliberal features.

Despite Philippine industrial mining's experiences of previous mining disasters, it appears that the domination of the Promethean discourse continues in the new mining law. In previous chapters, two mining disasters due to MMC operations happened in Marinduque island but affected different parts of the island. In Chapter 5, the slow onset mining disaster affected the eastern part of the island where Calancan Bay and Santa Cruz town are located. In Chapter 6, a sudden onset yet diminished tragedy happened in 1993 in Mogpog town in the northern part of Marinduque. This chapter covers a third environmental tragedy in Marinduque, a sudden onset and spectacular mining disaster that happened in Boac town found in the western part of the same island.

In 1996, Marinduque faced another mining disaster that shook the industry and state regulators. This time, the spectacle of the environmental tragedy resulted in immediate and substantial response from Marcopper Mining Corporation (MMC), government, the media, and international actors including the United Nations Environmental Programme (UNEP) and the Asian Development Bank (ADB). This was not the case in previous mining disasters in Marinduque. For the slow onset mining disaster in Calancan Bay, it took about five years before government took notice. Even then, government action was ambivalent. Also, the sudden onset yet diminished mining disaster in Mogpog, although spectacular and causing the death of two residents, did not receive much immediate attention by media and government. In both disasters, Marcopper denied any responsibility.

In this chapter, **I argue that, alongside oligarchic patrimonialism that corrupts the bureaucracy, Promethean conditioning led to the spectacular mining disaster and green politics was helpful in setting conditions for ecological reflexivity.** With Marcopper's faith in engineering technology, the company converted the Tapian mine pit into a tailings reservoir by sealing its tunnel with a cement plug, which is an unconventional engineering design. The spectacular physical characteristics of the disaster elicited immediate response from the different actors, including government and industry. But the responses of Marcopper and PDI, and some government regulators did not seem earnest. Following green politics, the local environmental movement countered their anti-reflexive behaviour by pushing for the use of independent experts in EIA. The actions of the movement helped to set conditions for ecological reflexivity, though reflexivity was thwarted in practice.

For the broader question of Philippine mineral resource governance, the aftermath of the spectacular mining disaster resulted in positive developments. However, these positive developments had their limits as far as enforcing substantive changes in mining is concerned.

### **1. Overview of the spectacular mining disaster in Boac; findings of political economy and social movement scholarships**

The spectacular disaster struck Boac town on March 24, 1996. Popularly known as the "Marcopper Mining Disaster," this incident was prominently featured in global media due to the scale of devastation it has caused. The site of the disaster was in Boac where Marcopper's drainage tunnel burst, unleashing millions of cubic metres of mine waste into the Boac and

Makulapnit river system. A washer-woman who frequented the river witnessed the immediate effects in the water when the disaster happened: “I was washing clothes when this dam caved in, so the water was a bit like milk. So now the shrimps were all jumping around me. The town mayor told us not to eat the shrimps. We did not eat them since they were poisoned” (Macdonald and Southall 2005, 29). Flash floods rapidly isolated some villages and thousands of residents. Six feet of muddy floodwater buried one severely affected village forcing residents to flee. Residents of twenty out of sixty villages were advised to evacuate. The toxic spill inundated a large area and caused huge crop and fisheries losses. Most residents in the area depended on this major water system for livelihood and domestic needs, in other words, for their daily survival. Damaged river crossings and road connections curtailed the mobility of affected residents. Physically, the 1996 spectacular disaster was visually dramatic and generated immediate attention.

### **1.1. Physical characteristics**

The mining disaster in Boac River is spectacular because of its temporal and spatial features. When the tailings reservoir broke in 1996, the mine tailings released was enormous. It happened suddenly and was concentrated in a river system. The temporal dimension of the spectacular disaster is that only in a few days, a huge amount of spill gushed into the river system. The estimates on the volume of tailings that escaped varied. Between two to three million cubic meters is believed to have escaped into the Makulapnit and Boac River system over four to five days at a discharge rate that varies between five and ten cubic metres per second (United Nations Environment Programme 1996). The spatial dimension of the disaster is that the tailings cascaded into the river system that did not have the capacity to contain the volume, resulting in the inundation of a large area. It took two days for the tailings to traverse the river’s twenty-six-kilometre stretch before reaching the mouth of the river into the ocean.

### **1.2. Shock value, immediate response**

The large volume of tailings released into the Makulapnit and Boac river system was not anticipated and no contingency plan was in place to address such occurrence. The disaster was a visual spectacle with critical shock value because of its acute characteristics. The Boac disaster and its impacts were immediately visible and felt.

This remains to be one of the world's most notorious tailings reservoir failure and certainly considered the worst in the Philippines (United Nations Environment Programme 1996). The notoriety of the 1996 disaster has been enduring, such that a marker was unveiled to commemorate the 20<sup>th</sup> year since the infamous environmental catastrophe hit Marinduque (Billones 2016). Geographers Holden and Jacobson judged that it is “perhaps the most notorious example of a tailings impoundment failure...” (2013, 68). However, recent tailings dam failures in Brazil in 2015 and 2019 were seemingly more spectacular and publicised.

Because of the spectacular disaster's acute physical characteristics and shock value, it received immediate attention from the media, international actors, and government. The 1996 spectacular disaster in Boac immediately made headlines in national media and captured the attention of international actors and the government. Media attention has been sustained in that it continued to feature the disaster in news coverage annually for several years. International organisations such as the UN and the Asian Development Bank (ADB) immediately came to Marinduque to conduct assessments. The ADB's team came two weeks after the disaster and then the UN Mission came two weeks later. The national government was the one that requested the UN Mission to immediately come to investigate. The national government briskly responded by suspending the mine's permit to operate. Only three days after the spill, President Ramos declared a “State of Calamity” for affected areas, upon the recommendation of the Interagency Committee on Environmental Health (Cabalda et al. 2002). The declaration acknowledges the severity of impact to nature and to people and guarantees immediate and substantial assistance.

The literature on Philippine political economy and social movements can provide insights into the conflicts surrounding the spectacular mining disaster in Boac. The local environmental movement in Marinduque that opposed Marcopper at the time was part of a national movement that had been maturing in capacity in advocating for environmental issues. When the mining disaster happened in 1996, it had been a decade since democratic space widened. The downfall of Marcos in 1986 sparked the growth in the number of non-government and community-based organisations (Magno 1999; Clarke 2013). This development spurred the Philippine environmental movement to transition from a nascent *environmental defence phase* (1978-1985), often overshadowed by the resistance to Marcos's authoritarian rule, to an

*identity-making phase* (1986-1991) when the movement consolidated its cause and resources (Magno 1999). By 1996, the environmental movement was at a mature stage as it already entered what Magno (1999) called the *strategic engagement phase* (1992-1997) when the movement was pushing the boundaries of environmental governance as it was gaining influence in both public and private sectors.

When the disaster happened in 1996, the environmental movement in Marinduque had become highly critical of environmental regulation in mining. The movement had been wary that some bureaucrats' amiable relations with Marcopper might affect rehabilitation efforts in favour of the mining company to the detriment of locals in Marinduque. The broader context of mining and environmental regulation in the Philippines can lend support to this belief of the movement. One description of Philippine state development is oligarchic patrimonialism, where a strong elite class with existing wealth preys upon a weak state to advance the oligarchy's wealth accumulation (Hutchcroft 1998). In Philippine industrial mining, successful lobbying of government by the mining industry peak body (Lopez 1992) is one manifestation of the patrimonial oligarchic state. This interpretation of Philippine politics is consistent with the common notion that the mining industry and government have friendly relations. In recent years, the Arroyo (2001-2010) and Duterte (2016-present) administrations manifest the coalition of political and economic elites in promoting a privatized mining agenda (Nem Singh and Camba 2020). Reflecting on the 1996 spectacular disaster in Boac, then DENR Undersecretary Antonio La Viña confirmed the amiable ties between mining companies and the government that contributed to the cause of the disaster (De la Cruz 2017). Among government agencies, the Mines and Geosciences Bureau (MGB) is the most susceptible to having close ties with the mining industry. The MGB's mandate includes not just the regulation but also the development of mineral extraction in the country. Thus, supporting industry preferences can work in the bureau's interests.

The political economy and social movement scholarships described above provide some explanations of the conflicts surrounding the 1996 mining disaster. Below, I add an environmental dimension to these explanations using an environmental discourse approach.

## **2. Promethean discourse**

The history of the operations of Marcopper and Placer Dome Inc. (PDI) had been underpinned by the Promethean discourse, though at times in a limited fashion. PDI is minority shareholder of the Marcopper company. Promethean conditioning is not surprising for a business entity, especially for a large corporation. This is also true in the context of the spectacular mining disaster, wherein the decisions of Marcopper and PDI manifested some elements of the Promethean discourse: 1) faith in capital-intensive technology to overcome resource scarcity and environmental impacts; 2) assumption of hierarchical relationships in relation to nonhuman systems; and 3) action on the basis of material self-interest in the resource at hand.

### **2.1. Reliance on capital-intensive technology**

Marcopper used capital-intensive technology that is required to extract low-grade copper ores. This operation results in mine waste that is stored in the tailings reservoir. Their faith in engineering technology was apparent when they decided to convert the Tapian pit into a tailings reservoir by putting a cement plug in the drainage tunnel. They made this decision when they began the development of the new San Antonio mine and the operations needed a tailings storage facility for this new mine development. When the old mine, Tapian pit, was getting depleted, Marcopper started the development of the nearby Mt. San Antonio as a new mine pit. They decided to store the waste from the new San Antonio mine by converting the old Tapian mine into a tailings reservoir. This is a manifestation of their faith in engineering technology in order to continue the extraction of low-grade copper ores.

### **2.2. Assuming hierarchical relationships**

The decision to convert Tapian pit into a tailings reservoir was based on an assumption by Marcopper and PDI that they can dominate nature effectively using engineering technology. This persistence in continuing the massive extraction of Marinduque's copper resources competed with the interests of Marinduque residents. Due to previous mining disasters that residents experienced due to Marcopper's mining operations, the island's residents had been opposing Marcopper's operations (Coumans 1999a; 1999b;

Macdonald and Southall 2005). One of the residents' grievances is that the economic gains from Marcopper's mineral extraction come at the cost of their physical health and their fishing and farming livelihoods. The latter, they say, is due to the environmental impacts of Marcopper's operations. Yet, despite the environmental tragedies and the residents' opposition, Marcopper and PDI pushed for the growth of its operations.

### **2.3. Motivated by material self-interest and disregarding risks**

As corporate economic agents, Marcopper and PDI prioritised their material self-interest, i.e. ensuring the continued production growth of their mining operations. They pursued their self-interest through massive mineral extraction regardless of the environmental and social consequences. I say this because of their decisions to: (1) convert the Tapani pit into a tailings reservoir and (2) continue their mining operations despite detecting seepage from the Tapani pit months before the spectacular disaster happened.

*First*, their decision to convert the Tapani pit into a tailings reservoir manifests material self-interest with little regard for risks. This observation is based on the UN assessment team's evaluation of the engineering design as unconventional and risky (United Nations Environment Programme 1996). The risky decision was undertaken so that Tapani pit could serve as a tailings reservoir to continue the mineral production of the new San Antonio mine, regardless of environmental consequences.

*Second*, the fact that Marcopper and PDI decided to continue their operations despite observing seepage from the cement plug of Tapani pit may suggest a manifestation of self-interest while disregarding risks. They reported this to the DENR months before the spectacular disaster happened (Futures Group International 2004). There is no data available that would say directly whether or not they seriously addressed the seepage. The findings of the DENR's investigations imply that Marcopper did not do enough. The DENR's investigation after the disaster found the company president and managers guilty of criminal negligence (De la Cruz 2017).

### 3. Administrative rationalism

Some important issues that emerged after the disaster involved assessing the environmental damage and determining an appropriate rehabilitation program. Marcopper and PDI subscribed to the administrative rationalism discourse that bestows power on administrators who organise expert knowledge for making decisions on environmental issues. In this thesis, administrative rationalism is understood in an ideal sense where it applies to government

that gives strong decision-making powers to administrators and experts (Dryzek 2013). This ideal means that administrative rationalism views bureaucracy and politics as separate. However, administrators and their decisions can be corrupted by political and financial interests, say when corporations are in control or have a strong influence in producing environmental knowledge (Kirsch 2014; Hatcher 2012).

The simultaneous subscription to the Promethean discourse and administrative rationalism by Marcopper and PDI is fraught because they may have similar elements, but also some contrasting elements. Both discourses accept the importance of production growth, although administrative rationalism does this indirectly by taking the political-economic status quo as given. But an important difference is that the Promethean discourse denies the limits of nature in so far as technology use can overcome resource scarcity and environmental impact, while administrative rationalism can take the constraints of ecological systems more seriously. The simultaneous subscription to these two discourses can be explained using Hajer's (1997) idea of a discursive space having multiple chambers (in his case, a chamber of concern and a chamber of regulation for the acid rain issue in the Netherlands). The dominant discourse in each chamber may be different. In this case, Marcopper and PDI subscribed to the Promethean discourse in one chamber, i.e. in their everyday mining operations and regulations. In another chamber, i.e. in their engagement with civil society, they subscribed to administrative rationalism. Their subscription to administrative rationalism through EIA manifested in: (1) validating expert knowledge, and the (2) assuming a hierarchical relationship dominated by administrators in relation to both society and ecological systems.

Marcopper and PDI subscribed to administrative rationalism by validating expert knowledge. Immediately after the disaster, Placer Dome Technical Services (Philippines) (PDTS), a subsidiary of PDI, embarked on environmental and social assessments of affected areas. Their

own findings and their review of other studies were used in a post-spill assessment report that included an environmental action plan (Placer Dome Technical Services (Philippines) Limited and Placer Dome Inc. 1997). Some areas assessed were human health, agricultural issues, biological effects, water quality, tailings characteristics, river environment, and marine environment. The assessments covered options for tailings disposal. The PDTS and PDI report (1997) concluded that submarine placement was the most suitable method and land-based disposal was the least preferred mainly due to long-term environmental liabilities. Later on, they would also hire other EIA consultants and use their findings in their application for a submarine tailings disposal permit from government regulators.

In 1997, Marcopper applied for a permit for submarine tailings disposal (STD) from the Department of Environment and Natural Resources (DENR). Marcopper proposed to dispose the tailings in the waters of Tablas Strait, located south of Marinduque island. On October 30, 1997, the DENR rejected the permit application primarily for legal reasons. Then DENR Secretary Victor Ramos explained that “under current laws and regulations, all the offshore and submarine areas of the country are considered to be Environmentally Critical Areas (ECA)...Hence, your application for the submarine placement of dredged channel tailings materials is hereby denied” (Coumans and MACEC 2002, 3). Ramos also expressed concern that there may be potential harm to the abundant fish areas near the strait and, thus, land-based disposal would be preferable.

Marcopper appealed the DENR’s rejection of its first STD permit application. Then in 1998, the DENR responded to the appeal by granting Marcopper the right to prepare an EIA. Whereas STD could be one of the options considered in the EIA, the then DENR Secretary Ramos emphasised that the EIA should include land-based disposal alternatives for spilled tailings and a full rehabilitation proposal (Coumans and MACEC 2002).

PDTS hired Woodward Clyde (Philippines) as their main EIA consultants for tailings disposal options. Besides commissioning an EIA, PDTS also brought in Vancouver-based Derek Ellis of Rescan Environmental Services Ltd. to make a presentation to the DENR officials. When Woodward Clyde (Philippines) completed the EIA, Marcopper applied for their second permit application for STD. On February 16, 1999, then DENR Secretary Antonio H. Cerilles rejected Marcopper’s second permit application for STD, mainly due to the “absence of social

acceptability”.<sup>10</sup> The DENR further instructed Marcopper to submit a final clean-up and rehabilitation program within thirty days to be implemented immediately by PDTS. Marcopper launched a social acceptability campaign among Marinduque residents and submitted another permit application for STD for the third time.

#### **4. Green politics**

In response to the spectacular disaster, the local environmental movement took actions consistent with green political discourse. By this time in 1996, the movement in Marinduque had already gained over twenty years of mobilisation experience. It kept pursuing its struggle despite setbacks mostly due to the Promethean conditioning of Marcopper and the state. This is a manifestation of contestatory politics in the Philippines, the kind where resistance from below challenges elite-dominated democracy (Quimpo 2008). I say that this local environmental movement is a variety of green political discourse because it: (1) recognised vulnerable and complex ecosystems, (2) valued inclusion among people, and (3) mobilised a heterogeneous composition of individuals and groups with different motivations. The movement has been demanding environmental justice from Marcopper and PDI, and advocated for broader political reforms in environmental regulation in Philippine mining.

##### **4.1. Recognising vulnerable and complex ecosystems**

The social movement’s grievances were underpinned by a recognition of vulnerable and complex ecosystems. These views were based on decades of local experience on the environmental and social impacts of Marcopper’s mining operations. Local residents witnessed the environmental degradation of their land and waters due to the disposal of mining waste. They claimed that this caused negative effects on their health and livelihoods, particularly the depletion of fish stocks and destruction of crops (Macdonald and Southall 2005; Coumans and Nettleton 2000).

Largely due to the acute characteristics of the 1996 spectacular disaster, the immediate impacts on nature, human health and safety, and livelihoods were evident to residents and the local environmental movement. However, there were some indications in the

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<sup>10</sup>DENR Secretary Antonio H. Cerilles to Marcopper President Teodoro C. Gabor, February 16, 1999, MACEC private collection (photocopy).

aftermath of the disaster that the mine waste was not as injurious as expected. This should not be taken, however, as making light of the suffering that the island and its people experienced due to the negative impacts of the mining disaster in Boac. The disaster's impact on nature indicated mixed findings. The immediate negative impact on the river was clear but the mine waste was not deemed to cause acute toxicity. In the first few years after the 1996 disaster, the environmental monitoring showed mixed results. On the one hand, in 1999, the tailings in the ocean is believed to have damaged seagrass. On the other hand, Marcopper's monitoring of the river water from 1996 to 2001 indicated improvement in its quality. The Boac disaster inflicted suffering on the people of Marinduque, particularly in the threat to their health and safety, and the loss of their livelihoods. In Boac, though health monitoring showed no adverse impact on residents due to the 1996 spill, there have been threats to health and safety due to the river siltation and toxicity. Affected residents suffered the loss of livelihoods. Thus there were plenty of tangible social and ecological concerns for the movement to highlight as they demand justice for the Promethean impacts of the disaster.

#### **4.1.1. Nature**

Without comprehensive rehabilitation of Boac river, the local environmental movement remains concerned over the long-term impact of the tailings spill to the environment. When the 1996 spectacular disaster happened, the immediate impact on the environment was palpable. The ADB assessment team concluded that the Boac River is ecologically dead (Son 1996). The UN Mission assessment team who visited a month after the spill reported that the Makulapnit and Boac rivers, including their channels and flood plains, were buried under mine tailings. The tailings reached the mouth of the river and onto the coast two days after the tailings reservoir failure. About two to three meters of tailings were reportedly deposited in the upper sections of the rivers. The UN team observed that there were large areas of deposition along the twenty-six-kilometre length of the river (United Nations Environment Programme 1996). At the time of the mission, the tailings were still flowing and being deposited in the near-shore marine environment.

A few years after the spill, environmental studies by an independent scientist, industry researchers, and government regulators showed mixed findings, with some sites showing signs of continued degradation and others, of improvement. A survey by marine biologist Sharon Taylor from August 16 to 29, 1999 showed that tailings from the spill spread out far into the ocean. “The seagrass bed is no longer continuous—large areas of mine tailings, devoid of seagrass alternate with the seagrass. This suggest that large areas of seagrass have been smothered by the tailings and did not survive” (Macdonald and Southall 2005, 30). However, in 2001, PDTS claimed that their five-year monitoring showed improvement of water quality and the return of aquatic life in upstream areas of the river (Macdonald and Southall 2005). PDTS also said that the water could be used for livelihood and domestic purposes. In 2003, Marcopper claimed that the impact of the spill had been greatly reduced to nothing since 1998 (Macdonald and Southall 2005). In the same year, the Philippine Department of Environment and Natural Resources corroborated this, citing other scientific studies suggesting that the remaining tailings do not pose any general environmental impact (Macdonald and Southall 2005).

These findings notwithstanding, the local environmental movement stressed that with no adequate rehabilitation of the river, the toxic materials remain at the bottom of the river and continue to pose the risk of contamination. As such, the movement continues to demand for the full rehabilitation of Boac River as a rectification to the Promethean impacts of the disaster.

#### **4.1.2. Health and safety**

The local environmental movement highlighted these safety concerns in their claims against Marcopper and PDI. Though the spill caused visually dramatic scenes, there is agreement by the ADB and UN missions that acute poisoning from the spill may be unlikely. But there is concern over the safety of residents should flash floods occur. Right after the spectacular disaster in Boac, Marcopper’s health team “encountered no health problems resulting from the incident. It was indicated that all health problems encountered are those previously existing or those common to the area” (Son 1996, para. 20). Early on,

the UN mission identified the anxiety over the environmental and health effects of the spill (United Nations Environment Programme 1996, 2). Though acute poisoning from the spill may be unlikely, the UN mission qualified that long-term exposure may pose increased health risk and recommended that properly-designed health studies be conducted to see long-term effects that could be correlated to the spill (Son 1996). PDTS monitored the groundwater for four years and found no identifiable effect from the mine tailings. PDI stated in a letter on August 5, 2004 that monitoring of health effect for 18 months since the spill revealed that acute health impact related to the spill were not detectable (Macdonald and Southall 2005). Both the ADB and UN missions identified the threat to residents' safety with the prospects of flash flooding due to excessive siltation of rivers.

#### **4.1.3. Livelihoods**

After the 1996 spectacular disaster, the livelihoods of residents were affected. Farms and fisheries were destroyed. Fishers and farmers lost their income. The spill inundated cropland which was used for growing bananas and other agricultural purposes (United Nations Environment Programme 1996). By government estimates, the toxic waste damaged over a million pesos (over US\$ 19,000) worth of grown freshwater and marine life and five million pesos (about US\$ 98,000) worth of milkfish fry (Macdonald and Southall 2005). Both UN and ADB findings indicate that toxic waste smothered aquatic life and made the river water unsuitable for irrigation, poultry, and household use (Son 1996). The spill also damaged infrastructure, such as most river crossings and road connections, affecting people's mobility for daily activities and making a living (United Nations Environment Programme 1996). These findings validated the suffering that the locals experience as they demand justice from Marcopper.

#### **4.2. Valuing inclusion**

The local environmental movement in Marinduque challenged the domination of industry in mining regulation. This promotes inclusion of other actors like vulnerable groups in mining where industry and government dominate.

The Marinduque Council for Environmental Concerns (MACEC) led the pursuit of a number of causes as it sought environmental and social justice claims from Marcopper and PDI. In particular, MACEC led the environmental movement in performing an active role in addressing the implementation deficit in EIA, where experts can serve industry interests and regulators lack capacity or allow perfunctory EIA processes to go unchecked. During the search for an appropriate disposal method of the tailings spill in Boac River, the environmental movement in Marinduque challenged the usual industry control of knowledge production in EIA in two ways, that are related to each other.

The first strategy was by writing petitions and letters to government officials expressing their opposition to STD, the preferred tailings disposal method of Marcopper and PDTS. Their opposition was based on local knowledge and research findings. The latter is related to their second strategy wherein the movement took an active role in knowledge production. Through the movement's robust network that included social researchers and technical experts, local and international fact-finding missions came to Marinduque to conduct post-spill assessments. The movement and its allies also exposed the supposed partiality of industry experts and some government regulators and pushed for having a third party to make a post-spill assessment and rehabilitation plan. These efforts of the movement resulted in the unprecedented hiring of a third party by the provincial government and funded by the national government.

#### **4.2.1. Campaign against STD**

In the few years that followed the 1996 tailings spill in Boac, one of the contentious issues was the rehabilitation plan for Boac River, specifically on the disposal of the tailings spill. Marcopper and PDTS consistently pushed for the STD method. The movement and its allies rejected this method early on, particularly when it involved the release of mine tailings into Tablas Strait.

Almost three months after the disaster, on July 23, 1996, then Mayor Madla wrote an open letter<sup>11</sup> to his constituents informing them that he had been meeting with

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<sup>11</sup>Boac Mayor Roberto M. Madla to Boac constituents, *Pahayag hinggil sa planong channel dredging ng Marcopper Mining Corporation sa Barangay Tabigue* (Statement concerning the channel dredging proposal)

representatives of Marcopper and the DENR to draw a rehabilitation plan for Boac River. In the letter, he said that Marcopper proposed channel dredging along Boac River that should release some mine tailings upstream that posed increased risk of flooding. Marcopper, he added, said that fine tailings will flow out into Tablas Strait. Mayor Madla warned that this will “*tiyakang sisira sa mayamang itlugan at silungan ng mga isda at iba pang yamang-dagat* (certainly damage the abundant breeding and dwelling areas of fish and other aquatic resources).”<sup>12</sup> Whereas the town mayor was not explicitly rejecting the STD method, he implied this rejection when he emphasised that releasing fine mine tailings into Tablas Strait will cause significant environmental damage.

More than a year later, in a September 16, 1997 letter, MACEC unequivocally rejected the STD method proposed by Marcopper, MACEC cited local knowledge based on Marcopper’s STD practice in Calancan Bay, and the environmental and social risks of STD even if placed in “deep sea”. MACEC reasoned that: “*Ayaw naming matulad ang karagatan ng Boac sa karagatan ng Calancan at lalong di kami papayag na sapitin namin at ng mga mamamayan ang karamdamang sinasapit ng mga taga-Calancan at mga karatig barangay dahil sa maruming karagatan* (We do not want the waters near Boac to suffer the same fate as Calancan Bay, and even more, we will not allow ourselves and the residents to suffer the illnesses being experienced by residents of Calancan Bay and nearby villages due to polluted waters).”<sup>13</sup> MACEC added that: “*Ang submarine disposal system, kahit na sa malalim na bahagi ng dagat ilagay ay di garantiya ng tiyak na kaligtasan lalo na sa mga lamang-dagat na lalong makakaapekto sa mga maliliit na mangingisda gayundin sa mga mamamayan* (The submarine tailings disposal, even if placed in deep sea, is not guaranteed to be fully safe, particularly for aquatic resources that will affect not only small-scale fishers but also the townfolks).”<sup>14</sup>

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of Marcopper Mining Corporation at Barangay Tabigue), open letter, July 23, 1996, MACEC private collection (photocopy).

<sup>12</sup>Ibid, p. 2.

<sup>13</sup>MACEC Chair Msgr. Senen M. Mapalad to Marinduque Vice-Governor Teodorito J. Rejano, September 16, 1997, MACEC private collection (photocopy).

<sup>14</sup>Ibid.

Despite the early opposition of the environmental movement in Marinduque to STD, Marcopper and PDTS appeared adamant in proposing the STD method. Over a year after the disaster in September 1997, MACEC described Marcopper as “insistent” (*ipinipilit*)<sup>15</sup> regarding the proposal. In fact, Marcopper applied for STD to the DENR for a third time after the first two applications were rejected. Concurrent with the multiple applications for STD were advocacy tactics by Marcopper and PDTS. In 1998, Coumans found out from DENR personnel and local residents that they were getting information about STD from experts, such as Derek Ellis, sent by PDTS (Coumans and MACEC 2002). After the second rejection of the STD application by the DENR on February 16, 1999 because of lack of social acceptability,<sup>16</sup> Marcopper and PDTS did not accept the decision and, instead, solicited endorsements from local groups in order to establish the social acceptability of STD and used that for their third application.

The environmental movement in Marinduque countered the advocacy strategies of Marcopper and PDTS by doing their own information campaign against STD and enjoined local organisations and *barangay* (village) councils to write letters and petitions expressing their opposition to STD. In 1999, in response to the DENR’s decision to reject STD for being socially unacceptable, MACEC consolidated petitions and resolutions opposing STD and asked for an unequivocal rejection: “to deny with finality the persistent application of the Marcopper Mining Corporation/Placer Dome Technical Services to rehabilitate Boac and Makulapnit River through Managed Submarine Disposal of Tailings in Tablas Strait or in any sea surrounding Marinduque....”<sup>17</sup> The letter enclosed 21 resolutions from *barangay* (village) councils, 26 resolutions from local organisations, a signature campaign signed by more than 8,000 individuals, and an open letter by MACEC with 68 signatures. Previously, 24 resolutions from other *barangay* (village) councils were already sent to the DENR.

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<sup>15</sup>Ibid.

<sup>16</sup>DENR Secretary Antonio H. Cerilles to Marcopper President Teodoro C. Gabor, February 16, 1999, MACEC private collection (photocopy).

<sup>17</sup>MACEC Coordinator Elizabeth L. Manggol to DENR Secretary Antonio H. Cerilles, April 28, 1999, MACEC private collection (photocopy).

MACEC was not alone in leading this campaign; the town mayor of Boac complemented MACEC's efforts. In a 2016 interview, Mayor Madla who returned to office in 2010 made it clear that he consistently stood with groups like MACEC who opposed the submarine tailings disposal of Marcopper and PDTS (Madla 2016). Early on in 1996, then Mayor Madla encouraged his constituents and colleagues to voice out their concerns and submit these in writing to his office. Barely three months after the disaster in July 1996, Madla enjoined his constituents to be critical of any proposal from Marcopper and make sure it can lead to the full rehabilitation of Boac River. He asked them to "*tumindig tayo ng sama-sama at ipagsigawan ang ating tinig* (stand united and make our voices heard)."<sup>18</sup> About four months later in November 1996, Madla called on local legislative and executive councils, associations and institutions, NGOs, people's organisations to release resolutions and statements regarding their stand on the operations of Marcopper.<sup>19</sup> At this early stage after the disaster the town mayor was not asking these groups to express opposition to STD, but this forms part of the culture of demanding justice claims, including social and environmental compensation, through writing from Marcopper that extended to the campaign against STD later on.

#### **4.2.2. Environmental knowledge production from below**

In Philippine industrial mining, one of the current forms of contention for the environmental movement is in environmental knowledge production, apart from protests and legal action (Nem Singh and Camba 2016). Just as Quimpo (2008) characterised Philippine democracy as contested, where elite democracy and democracy from below confront each other, the same can apply to environmental governance. By the time the 1996 spectacular disaster happened in Boac, the environmental movement in the Philippines had already entered a mature phase and had capacities in environmental knowledge production, including scientific

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<sup>18</sup>Boac Mayor Roberto M. Madla to Boac constituents, *Pahayag hinggil sa planong channel dredging ng Marcopper Mining Corporation sa Barangay Tabigue* (Statement concerning the channel dredging proposal of Marcopper Mining Corporation at Barangay Tabigue), open letter, July 23, 1996, MACEC private collection (photocopy).

<sup>19</sup>Boac Mayor Roberto M. Madla to Village Chair and Boac constituents, *Labanan ang panlilinlang* (Fight against deception), open letter, July 23, 1996, MACEC private collection (photocopy).

research. After the disaster, official EIA activities predominantly controlled by industry and bureaucracy was confronted by counter-EIA initiatives that involved direct or indirect environmental knowledge production.

Directly, environmental knowledge production from below is exemplified by scientific and social investigative missions initiated by civil society organisations. In the 1990s, these investigative missions were an emerging activity for the environmental movement in the Philippines. In Marinduque, the environmental movement and its allies conducted their own research on STD to justify their opposition to the method. The movement also networked with groups that had substantial research capacity, including scientific investigation, to bolster the movement's social and environmental justice claims against Marcopper and PDI. In environmental just as on other issues, this activity can involve advocacy research undertaken by activist researchers and professionals that puts the concerns of marginalised and vulnerable groups at the fore, as a counter to the technical rationality of professional experts (Fischer 2000). One of the critiques of advocacy research is that its participatory component can be improved by increasing the involvement of citizens; in practice, professional experts can still dominate the process, even if they do have a clear commitment to serve marginalised and vulnerable populations. In Marinduque, this critique may not apply as the starting points of these missions have often been the grievances of affected residents.

The environmental movement in Marinduque conducted its own research on STD to inform its position on the proposal by Marcopper and PDTS. The movement was already resistant to the STD method because of the negative experience they witnessed in Calancan Bay. Further, Catherine Coumans from the non-profit organisation MiningWatch, trained as a social researcher, conducted her own investigation in 1998 on STD policy and practice in her home country, Canada, one of the pioneers of the method. She discovered that this disposal method posed uncertain environmental effects and had been "effectively" banned in Canada since 1975 (Coumans and MACEC 2002, 6). Her findings, among others, were used to justify the movement's opposition to STD. Coumans prepared a leaflet outlining reasons to oppose STD and, with support from the local environmental

movement, released to Marinduque residents. Consistent with green politics, this action counters the over-reliance of administrative rationalism to experts. In this case, these are experts associated with industry.

After the disaster, civil society groups in the Philippines conducted fact-finding missions that focused on different issues after the mining disaster— environmental, human rights, and health, among others. A leading organisation in this type of work is a national NGO founded in 1989, the Center for Environmental Concerns (CEC) – Philippines, that claims to promote pro-people, patriotic, sustainable and scientific policies and programs for environmental protection.<sup>20</sup> Patriotism may not be usual to describe environmental policies, but this is not surprising in this case because CEC-Philippines is influenced by the nationalist democratic ideology of the mass movement that was formed during the dictatorial regime of Marcos. CEC-Philippines also works with grassroots organisations and communities to support the improvement of their living conditions while claiming to promote a balanced and healthy environment.

After the disaster, CEC-Philippines led an environmental investigative mission (EIM) from May 8 to 11, 1996. Their EIM is distinct from official environmental impact assessment (EIA) activities in terms of purpose, participants, and approach. Aside from producing knowledge on the post-disaster environmental impacts, the EIM findings were intended for education and advocacy. The participation was multi-sectoral and multi-disciplinary. The approach is “scientific, creative, evocative and participatory” (“The Marcopper Tragedy” n.d.). It strongly acknowledges the value of local or indigenous environmental knowledge in research. Therefore, the EIM approach is a combination of scientific, academic, and local or indigenous knowledge production. It is clear from the EIM report that their impact assessment procedure is distinct from the technocratic approach underlying official EIA activities. In 1997, CEC-Philippines released a report that not only presented environmental impacts of the disaster but also proposed strategies for rehabilitation (Macdonald and Southall 2005).

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<sup>20</sup>Center for Environmental Concerns-Philippines brochure, n. d., CEC-Philippines private collection (digital copy).

The EIM findings of CEC-Philippines were helpful to later missions such as Oxfam Australia's Mining Ombudsman (Macdonald and Southall 2005). Whereas CEC-Philippines' EIM may be considered as representing an advanced social movement capacity and contributed in the production of other knowledges after the disaster, it has some limitations. First, it did not gain the same traction as other high-profile missions conducted by the UNEP and ADB right after the disaster. The findings of the UN and ADB missions have been extensively used in news media, campaigns, and research. I attribute this lack of traction to the fact that civil society groups engaged in this work do not have the same high-profile stature and publicity resources of international organisations. Second, the investigative resources of the EIM may not compare with that of the industry. However, these limitations do not preclude the fact that these counter-EIA activities still pose a clear and much-needed challenge to the domination of industry and the bureaucracy in environmental knowledge production in Philippine mining.

Later on in 2002, MACEC invited Oxfam Australia's Mining Ombudsman to assist them with their claims against Marcopper's operations in Marinduque. The Mining Ombudsman assists communities who experience human rights violations and environmental degradation by transnational mining companies (Macdonald and Southall 2005). The ombudsman assists these communities by compiling complaints and documentary evidence, and conducting social and environmental on-site investigations, and presenting their findings to mining companies. If a mining company dismisses or does not respond to complaints, the ombudsman may conduct further investigation and present new findings to the mining company. If a mining company continues to be dismissive or unresponsive, the ombudsman will launch a media and public campaign to pressure the mining company to address community grievances.

In Marinduque, the Mining Ombudsman compiled initial findings from research by the environmental movement and allies (e.g. MACEC, Coumans, and CEC-Philippines), and from open-source primary documents. In November 2002, the preliminary report was sent to PDI who responded in December 2002 to provide

feedback and correct what it claimed were “factual inaccuracies and misleading statements”.<sup>21</sup> In the letter, PDI Vice President K. D. Ferguson refuted a number of claims, including environmental ones: that the river is toxic; and that PDI did not meet its obligations regarding the effective plug of the tunnel, and regarding the removal of tailings and rehabilitation of the river. Ferguson highlighted findings from the five-year monitoring of the Boac River by PDTS that showed improved conditions of Boac River, including the return of aquatic life and the resumption of use by locals for domestic and livelihood needs.

Ferguson also claimed that PDI fulfilled their post-disaster commitments “substantially”.<sup>22</sup> The tailings plug that failed was replaced by a permanent plug that was certified by an independent group after installation. The removal of tailings had stopped pending government approval and the controversies over STD during community consultations, despite PDTS’s position that it was the “most scientifically sound method of disposal”.<sup>23</sup> Residents preferred to have the tailings removed and placed within Marcopper’s mine site, which Ferguson explained needed the approval of Marcopper, before PDTS could perform such action. PDI divested from Marcopper in 1997 and PDTS also left the rehabilitation work in 2001. Ferguson explained that PDTS’s exit was due to its “desire to meet its contractual obligation” and “determined that the remaining work was best handled locally by Marcopper and its controlling shareholder, F Holdings, in consultation with the appropriate Philippine authorities”.<sup>24</sup> PDTS provided sufficient funds to Marcopper and F Holdings to undertake the remaining rehabilitation work to be done, specifically, removing the tailings and placing them within the mine site. The Mining Ombudsman responded to PDI saying they stood by their claims (Macdonald and Southall 2005). The ombudsman proceeded to conduct their on-site investigations in 2004 and presented their findings to PDI who again refuted the grievances of affected residents and reiterated their lack of legal responsibility. In April 2005, Oxfam

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<sup>21</sup>PDI Vice-President for Safety and Sustainability K. D. Ferguson to Oxfam Australia Executive Director Andrew Hewitt, December 17, 2002, MACEC private collection (photocopy).

<sup>22</sup>Ibid, p. 2.

<sup>23</sup>Ibid.

<sup>24</sup>Ibid.

Australia and its partners launched the public campaign for Marinduque based on their research findings (Oxfam Australia 2006).

As discussed in the previous section, the environmental movement in Marinduque, particularly Coumans and colleagues, had reason to believe that the experts contracted by Marcopper and PDTS are promoters of STD. They also believed that at least some government regulators favour Marcopper and PDTS in this issue. In 2000, after repeated calls to deny the STD proposal, MACEC made the latter issue explicit in a letter sent to then DENR MGB Director Horacio Ramos: “We are really wondering why MGB/DENR is still entertaining the overtures of Marcopper/PDTS/Placer Dome to go into STD when this is already outlawed in Canada since 1977... and the US Environmental Protection Agency has also held firm to its ban on the practice”.<sup>25</sup> Because of the movement’s distrust of the mining company and government regulators who seem partial to STD, the movement supported the search for an independent assessment team who can provide reliable rehabilitation strategies for Marinduque. This advocacy of the movement counters a corrupted deployment of expertise that is not part of administrative rationalism.

Then Marinduque Congressman Edmundo O. Reyes, Jr. became an important ally of the movement in the search for an independent assessment team. Then Congressman Reyes used his position and networks to support the broad agenda of the environmental movement in Marinduque, including the identification of a competent independent assessment team with no known ties to the mining industry. After the disaster, he was appointed co-chair of Task Force Marcopper formed by the DENR. Reyes was one of those who ensured that government authorities commit to responding to the crisis in Marinduque. In a letter to then DENR Secretary Antonio H. Cerilles in 1999, then Congressman Reyes outlined the different commitments made by government authorities, particularly the DENR, in a previous meeting.<sup>26</sup> This included the process of selecting an

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<sup>25</sup>MACEC Chair (Sta. Cruz-Torrijos Chapter) Rev. Fr. Allan L. Mapalad to DENR MGB Director Horacio C. Ramos, February 28, 2000, MACEC private collection (photocopy).

<sup>26</sup>Marinduque Congressman Edmundo O. Reyes, Jr. to DENR Secretary Antonio H. Cerilles, September 29, 1999, MACEC private collection (photocopy).

independent assessment team represented by the provincial government, in consultation with stakeholders. The assessment team was expected to conduct a technical review of the different options possible for the clean up, rehabilitation and restoration of the affected areas. The local environmental movement was involved in evaluating the credibility and expertise of the assessment team.

Then Congressman Reyes also went to the United States to look for prospective experts who could be part of the assessment team. He had meetings with NGOs, academic departments, and United States Geological Survey (USGS) members who signified interest in the project. In the end, the provincial government appointed the USGS to lead the independent assessment team. Coumans learned from a DENR official in April 2000 that Marcopper decided not to fund the fees of USGS and its partners (Coumans and MACEC 2002), although then DENR Secretary Cerilles told Marcopper to fund the independent assessment team to be hired by the provincial government in a 1999 communication.<sup>27</sup> The fees of the team were funded by the Office of the President, instead. The findings of the team led by the USGS, among other studies, were used as evidence for the class suit filed by the Marinduque provincial government against PDI in 2005.

### **4.3. Heterogeneous composition of the movement**

In Marinduque, the maturity of the environmental movement manifested in a broad support network and increased resources, which are common features of social movement development (Tarrow 2011). When the 1996 spectacular disaster happened, civil society groups in Marinduque continued their steadfast opposition against mining in Marinduque. The environmental movement grew through robust organising and membership activity, legal formation, and engaging in a new terrain of struggle. Building on the earlier mobilisation efforts against Marcopper operations in Calancan Bay and Mogpog River, the local movement grew into a broad coalition that included residents from Santa Cruz, Mogpog, and Boac, joined by local elected officials, which meant having allies in government. Local opposition to the Promethean impacts of the disaster was led by MACEC whose members included local NGOS, residents, and

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<sup>27</sup>DENR Secretary Antonio H. Cerilles to Marcopper President Teodoro C. Gabor, February 16, 1999, MACEC private collection (photocopy).

elected officials (Coumans and MACEC 2002). MACEC was born out of the Social Action Center of the Catholic diocese of Marinduque that was established in 1981 and has since supported social causes in the province. Though MACEC already existed before 1996, it was only formally incorporated a few months after the disaster.

Notable allies of the movement include Boac Mayor Roberto M. Madla (1995-2004, 2010-present), former Marinduque Congressman Edmundo O. Reyes, Jr. (1998-2007), and Canadian anthropologist and environmentalist Catherine Coumans. Since the spectacular disaster happened in 1996, Mayor Madla has been steadfast in supporting the justice claims of the people of Marinduque. An engineer himself, Madla even proposed an alternative remediation plan for the disposal of tailings in Boac River. Two years after the disaster, in 1998, Marinduque political dynasty scion Edmundo O. Reyes, Jr. won his first term as congressman, as did his mother Carmencita O. Reyes as governor (1998-2007, 2010-present). During the campaign, the Reyes matriarch received a considerable grant from Marcopper for electric power development, a move that appeared to be the forging of an alliance between the Reyes family and Marcopper (Wurfel 2006). As a congressman, however, Reyes became supportive of the environmental movement and used his position to advance the movement's claims against Marcopper. The movement also found an important ally in Coumans who spent her PhD fieldwork in Marinduque studying Basic Christian Communities from 1988 to 1990. After the disaster in Boac, Coumans founded an NGO supporting mining disaster victims in Marinduque and later joined MiningWatch Canada, an NGO that monitors Canada's mining industry. As mentioned earlier, Coumans' work served a key role in social movements' opposition to STD.

## **5. Ecological reflexivity and the spectacular mining disaster**

I will now evaluate the spectacular mining disaster using the lens of ecological reflexivity. As a normative ideal, ecological reflexivity is the capacity to recognise environmental risks and impacts, rethink practices and values that contribute to these environmental risks and impacts, and respond by reconstructing practices, structures, and values. The physical traits of the spectacular mining disaster contributed to promoting ecological reflexivity, particularly in enabling the immediate recognition of the impacts of the disaster. Also, unlike the dramatic

mining disaster in Mogpog that happened during a typhoon, Marcopper and PDI did not have a clear excuse to exonerate themselves.

Using the perspective of ecological reflexivity, there are two evaluative lessons that can be drawn in this case. First, the case revealed the persistence of anti-reflexive behaviour manifested in: Marcopper's denial of responsibility, its inadequate response, its manipulation of expert knowledge, and administrators' abetting of Marcopper's manipulation of expert knowledge. Marcopper's denial of responsibility showed the limit of the Promethean discourse in explaining Marcopper's behaviour. But the other actions that countered ecological reflexivity are consistent with the Promethean discourse, particularly the belief in forgiving nature. By this, I mean Marcopper's bias for a cheaper but environmentally risky tailings disposal option. This is not surprising by itself, but it shows the limits of immediate recognition of environmental and social impacts of a spectacular mining disaster. Considering that there is already the impetus of a spectacular mining disaster, the case revealed entrenched Promethean conditioning that contributed to anti-reflexivity by making it hard to accept the idea that a disaster meant that established practices needed to be re-thought.

Second, the local environmental movement countered the anti-reflexive behaviour of Marcopper and administrators. The manoeuvrings of Marcopper and PDTS to influence bureaucratic decisions were publicised by the movement. The use of expert knowledge by Marcopper and PDTS to advocate for STD were countered by the local environmental movement in Marinduque (influenced by green political discourse) after decades of mobilising in response to environmental damage due to previous mining disasters.

## **5.1. Anti-reflexive behaviour**

### **5.1.1. Marcopper's denial of responsibility**

Marcopper and PDI denied any wrongdoing, as they did for previous environmental issues they faced. After some assessments and investigations, however, it was apparent that their denial lacked credibility (Coumans and Nettleton 2000; Futures Group International 2004). In the opinion of some assessors and regulators, Marcopper and PDI were environmentally and

criminally negligent (United Nations Environment Programme 1996; De la Cruz 2017).

Marcopper and PDI denied responsibility by invoking *force majeure* (an act of God), claiming that a minor earthquake caused the spectacular disaster. Because *force majeure* is based on a fatalistic notion of nature, this contradicts the Promethean discourse's belief in forgiving or benign nature. This seems to indicate the Promethean discourse cannot fully explain the behaviour of Marcopper and PDI in this case, especially since they did not actively deploy technological solutions to address nature's capriciousness. They abandoned their commitment to the Promethean discourse when it was strategic to do so.

After the spill, Marcopper President John Loney assured that company officials "had done everything humanly possible to prevent the accident" (Son 1996, para. 34). The ADB also reported that what happened was an "accident rather than the result of negligence or non-compliance with environmental requirements" (Son 1996, para. 31). The ADB was a major funder, through a loan, of the San Antonio mine. A year after the spill, PDTS and PDI reported in their post spill impact assessment that a 3.2 magnitude (Richter scale) earthquake a week before the disaster may have contributed to the accident, as they referred to the event (Placer Dome Technical Services (Philippines) Limited and Placer Dome Inc. 1997, 1). In popular material, PDTS made the causation stronger, explaining that "[t]he spill was caused when a tunnel that was no longer used and which had been plugged several years ago leaked after an earthquake." (Placer Dome Technical Services 1997, 3).

Contrary to some of the ADB team's findings and the company's version of the spill, the UN mission which investigated the situation a month after the spill found Marcopper at fault for the spill. The UN Mission criticised Marcopper's evident lack of priority of environmental management, among other problems (United Nations Environment Programme 1996). Other facts also counter Marcopper's claim that the earthquake caused the leakage. Interviews with employees of the Philippine Institute of Volcanology and Seismology revealed that the said earthquake was a minor one and did not merit the attention of their institute

(Coumans and Nettleton 2000). The seepage issue of the tailings reservoir was reported by Marcopper to the DENR months before the earthquake, such that in the opinion of the independent assessment team, Futures Group International, the earthquake may have contributed to the tailings reservoir failure but was unlikely to have been its cause (Futures Group International 2004). Then DENR Undersecretary Antonio La Viña said that their investigation found the company president and managers guilty of criminal negligence (De la Cruz 2017).

Despite ADB's findings and PDTs's claims that the event was an accident, PDI and Marcopper made reparation commitments for damages and losses due to the spectacular disaster and acted on them in the early days after the spill. This is a major difference from the previous mining disasters when it took much longer for the company to respond to justice claims of mining-affected residents. The quick response by Marcopper and PDI in the aftermath of the disaster may be attributed to the spectacular nature of the disaster which had acute characteristics that immediately captured national and international attention. In this way, the behaviour of PDI and Marcopper is more reactive than reflexive, prompted more by the negative publicity brought about by the spectacular disaster. My claim is strengthened when you consider not only the mining company's denial of responsibility and environmental negligence, but also critics' claims that the mining company's reparations had been inadequate.

### **5.1.2. Marcopper's inadequate response**

The seeming inadequacy of Marcopper's reparation and rehabilitation efforts indicate measures to minimise expenses influenced by Promethean conditioning. Instead of genuine response, what is apparent are positive actions after the disaster that may have been done to counter the negative publicity of the spectacular disaster rather than helping constitute efforts towards reflexive governance.

Just about two weeks after the spill, PDI CEO John Willson wrote to then President Fidel Ramos acknowledging the damage and suffering caused by the spill and promising PDI's commitment to make reparations and fulfil their legal responsibilities (Macdonald and Southall 2005). The ADB and UN assessment

teams found Marcopper to have taken steps to take full responsibility. Marcopper already built roads and was willing to undertake a resettlement program and provide compensation from an Environmental Guarantee Fund (EGF) worth five million pesos (around AUD 135,000). According to the ADB team, Marcopper was using heavy equipment to fill the tunnel with concrete and grouting materials with the aim of fully sealing the tunnel in two weeks (Son 1996). As it happened, it took a few more weeks longer than that before the discharge from the tunnel had practically no tailings (Futures Group International 2004). The UN team noted Marcopper's assistance—relief goods, medical services, building of bridges and roads, building of protective dikes, among others (United Nations Environment Programme 1996). PDTS guaranteed PHP 40 million (around AUD one million) to the fund to be used for compensation claims (Macdonald and Southall 2005). In a 2004 letter, PDI claimed that they spent US\$71 million on works related to the spill—tunnel plug, river clean-up, and loan repayment (Macdonald and Southall 2005).

Although PDI and Marcopper clearly made commitments and efforts to take responsibility, there were some criticisms by the UN and others concerning the immediate efforts to stop the flow of tailings, the amount spent on repairs and rehabilitation, and the adequacy of structural repairs done. At the time of the UN field visit four weeks after the spill, the team pointed out the inadequacy of current remediation efforts. The mission acknowledged a number of serious efforts by Marcopper to stop the flow of tailings, but Marcopper has so far failed at the time (United Nations Environment Programme 1996). In the succeeding months, the discharge was greatly reduced and a new bulkhead installed in 1997 (Futures Group International 2004). The Boac town mayor pointed out that a big portion of the total amount spent on spill-related work was the US\$40 million loan repaid to ADB, making expenses for actual work smaller (Macdonald and Southall 2005). By 2004, authorities and residents continued to have fears about the integrity of some mine structures. In fact, Klohn Crippen, the consulting firm contracted by PDTS, claimed in 2001 that their audit revealed serious issues in some mine structures and recommended immediate repairs. However, Marcopper assured that the mine structures were safe (Macdonald and Southall 2005).

### 5.1.3. Marcopper's manipulation of expert knowledge

EIA and administrative rationalism in general can make a positive contribution to ecological reflexivity in a governance system. This is possible if expert knowledge can help bureaucracy recognise, rethink, and respond to environmental issues through administrative solutions. Marcopper and PDI may have been subscribing to administrative rationalism in one chamber. However, their partiality towards experts who promoted STD thwarted the reflexive potential of administrative rationalism. The STD method is favoured by Marcopper and PDI because it is a cheaper option (Coumans 1999a). This anti-reflexive behaviour is aligned with their subscription to the Promethean discourse in another chamber, where there is a belief in forgiving or benign nature. Marcopper appeared to exceptionally favour STD by influencing government regulators and local residents to support STD. This diminished the reliability of expert knowledge that is crucial in making ecologically rational bureaucratic decisions in keeping with administrative rationalism. Marcopper was bent on advocating for STD instead of using independent expert findings to inform administrative decisions.

Marcopper and PDTS tried to influence government regulators to favour STD. Marcopper appealed the DENR's rejection of its first STD permit application. Then in 1998, the DENR responded to the appeal by granting Marcopper the right to prepare an EIA. Whereas STD could be one of the options considered in the EIA, the then DENR Secretary Ramos emphasised that the EIA should include land-based disposal alternatives for spilled tailings and a full rehabilitation proposal (Coumans and MACEC 2002). PDTS hired Woodward Clyde (Philippines) as their main EIA consultants for tailings disposal options. Besides commissioning an EIA, PDTS also brought in Vancouver-based Derek Ellis of Rescan Environmental Services Ltd. to make a presentation to the DENR officials. In November 1998, Canadian environmental activist Catherine Coumans who had been involved in the anti-mining movement in Marinduque learned from a DENR official at the time that PDTS presented Ellis to the DENR as an academic and an independent adviser (Coumans and MACEC 2002). But Coumans and MACEC pointed out that what the DENR officials were not aware of was that the consulting firm of Ellis, Rescan Environmental Services Ltd.,

“specialised in STD since the 1970s and promoted the technology around the world” (2002, 3), suggesting Ellis’s bias towards STD.

My research on Ellis’s background showed that Coumans and her colleagues were right to be skeptical of the expert advice of Ellis on STD. He had been part not just of most STD developments worldwide from 1971 to 1996 (Ellis 2008) but also in scholarship claiming the environmental soundness of STD in a number of co-authored publications (Ellis, Poling, and Baer 1995; Jones and Ellis 1995; Ellis and Robertson 1999; Poling et al. 2002). Whereas claiming the environmental soundness of STD is not an issue by itself, Ellis and his co-authors have an implied value judgement that favours STD. For instance, this is manifest in the book *Underwater Tailing Placement at Island Copper Mine: A Success Story* (Poling et al. 2002). In 1971, Canada’s Island Copper Mine became one of two pioneer mines in the world to implement STD. In the same year, Ellis was appointed as a member of Island Copper Mine’s environmental advisory group (Ellis 2008). The book title itself suggests that the experience of using submarine tailings disposal was favourable. The text, however, documents both successes and lessons learned from the STD implementation of Island Copper Mine that ceased operation in 1994. Overall, the authors argue that the technology can be cost-effective and environmentally friendly under the appropriate marine conditions and for particular tailings (Poling et al. 2002). But the Canadian government had a different verdict. In 1996, the Canadian Department of Environment released their environmental assessment of Island Copper Mine based on decades of environmental monitoring of the site and concluded that the tailings caused massive and permanent changes to the sea floor (Dold 2014). Based on the assessment report, Canada banned marine disposal tailings. The Island Copper Mine case demonstrates that when monitoring data lends doubt on the reliability of STD, Ellis and colleagues will still favour the technology.

Marcopper and PDTS also tried to influence local residents to favour STD. After Marcopper’s first permit application was rejected by the DENR in 1997, Coumans learned from local residents that PDTS presented a consultant to them who told them that STD is an established technology that is accepted and used widely, even in Canada (Coumans and MACEC 2002). Marcopper applied a similar strategy

when their second permit application for STD was rejected. When Woodward Clyde (Philippines) completed the EIA, Marcopper applied for their second permit application for STD. On February 16, 1999, then DENR Secretary Antonio H. Cerilles rejected Marcopper's second permit application for STD, mainly due to the "absence of social acceptability".<sup>28</sup> The DENR further instructed Marcopper to submit a final clean-up and rehabilitation program within thirty days to be implemented immediately by PDTS. Instead of following DENR's instruction, Marcopper stopped all remediation work on Boac river and focused on campaigning for the acceptability of STD among local residents (Coumans and MACEC 2002). Marcopper launched an information drive, sought endorsements from various local groups and individuals, and submitted another permit application for STD for the third time. While a few endorsements were provided, some of these endorsements were questionable. For instance, one local group that endorsed STD was the Marinduque Incurable Scuba Diving Addict Club, Inc. which locals had not heard of before (Coumans and MACEC 2002).

The advocacy strategies of Marcopper and PDTS demonstrate their resolve to gain a permit for STD from the DENR. These actions prompted questions on the independence of the expert advice of PDTS consultants. In fact, this issue was addressed by then DENR Secretary Cerilles' in 1999 in his rejection letter to Marcopper's second permit application for STD. He required PDTS to fund the hiring of independent consultants to be chosen by the provincial government.<sup>29</sup> It should be noted that this requirement is being asked despite the previous expert studies done by PDTS consultants to justify the previous permit application for STD.

#### **5.1.4. Administrators' abetting of Marcopper's manipulation**

Based on the actions of some DENR officials particularly from the Mines and Geosciences Bureau (MGB), the local environmental movement in Marinduque suggested that these officials favoured STD. The DENR hired experts to counter

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<sup>28</sup>DENR Secretary Antonio H. Cerilles to Marcopper President Teodoro C. Gabor, February 16, 1999, MACEC private collection (photocopy).

<sup>29</sup>Ibid.

the arguments of those who opposed the technology. The MGB also offered names to the provincial government from supposed consulting firms supporting STD. With some urging from Marcopper, DENR created a review committee that ultimately decided to approve the STD proposal, albeit through a questionable decision-making process.

In 1998, Coumans produced and circulated a short document containing points for opposing STD. The DENR responded to this by hiring NSR Environmental Consultants to counter the points raised by Coumans and circulated NSR's twelve-page document in Marinduque (Coumans and MACEC 2002). Coumans and colleagues claimed that NSR Environmental Consultants is a known promoter of STD. In an April 2000 letter, the then DENR's Mines and Geosciences Bureau (MGB) Director Horacio C. Ramos assured the local environmental group in Marinduque that the bureau was not endorsing STD, but in fact was supporting the provincial government's search for an independent assessment team that will explore the various options for tailings disposal.<sup>30</sup> Then MGB director Ramos also indicated that attached to his letter are responses to a short document containing reasons for objecting to STD. He clarified that the responses are not meant to defend Marcopper and PDTS but are simply based on studies that they gathered.<sup>31</sup> The responses were based on the twelve-page document by NSR Environmental Consultants (Coumans and MACEC 2002). Whereas then MGB Director Ramos made it clear that his office is not endorsing STD, his defense can be questioned by the fact that his bureau's umbrella organisation, the DENR, committed resources to counter the arguments of STD opponents by hiring NSR Environmental Consultants, regardless of whether or not it is a promoter of STD.

As the provincial government's search for suitable independent consultants went on, then MGB Director Ramos offered an initial list of consultants from Australian firms: David Gwyther from Dames & Moore, and Stuart Jones from NSR Environmental Consultants, Pty. Ltd.<sup>32</sup> Gwyther would later move to NSR

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<sup>30</sup>MGB Director Horacio C. Ramos to MACEC Chair Msgr. Senen M. Mapalad, April 2000, MACEC private collection (photocopy).

<sup>31</sup>Ibid.

<sup>32</sup>MGB Director Horacio C. Ramos to Congressman Edmundo O. Reyes, Jr., October 11, 1999, MACEC private collection (photocopy).

Environmental Consultants. Then MGB Director Ramos described Gwyther and Jones as “world-renowned and reputable experts on mining environment management.”<sup>33</sup> But Coumans and colleagues (2002) identified Dames & Moore and NSR Environmental Consultants as promoters of STD. The letter of then MGB Director Ramos, however, indicated that there is ongoing communication at the time with other experts who may be included in the list. These other consultants are from the University of Denver’s Colorado School of Mines, the UN Environment Programme, and the Ecole des Mines de Paris (Paris School of Mines). This means that the MGB was not considering only Gwyther and Jones, but it does raise questions as to why these names were the ones immediately offered.

Coumans and colleagues did not provide any basis for their claim that Dames & Moore and NSR Environmental Consultants are promoters of STD. My research on the backgrounds of Dames & Moore and NSR Environmental Consultants cannot confirm the claim of Coumans and colleagues, but there is some indication that the Co-Founding Director of NSR Environmental Consultants, Stuart Jones, may have had a favourable outlook on STD. Jones has some association with Derek Ellis, who along with other colleagues advocated for STD under certain conditions (Poling et al. 2002). Jones co-authored a research paper with Ellis that reported the regulatory compliance of STD practice in Misima Mine in Papua New Guinea, with no mine tailing found on surface waters in the five years since the mine opened in 1989 (Jones and Ellis 1995). These positive experiences encountered by NSR Environmental Consultants may not lead the firm to be an advocate for the technology but may be favourable to STD as a tailings disposal option.

Marcopper managed to convince the DENR to create its own independent review body tasked to evaluate the STD proposal of Marcopper, according to the review committee’s chair Dr. Zenaida Batac-Catalan (Coumans and MACEC 2002). The evaluation process and decision of the body became controversial. After evaluating the studies presented by PDTS, Aquatic Ecology and Pollution

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<sup>33</sup>Ibid.

specialist Dr. Batac-Catalan concluded that STD was not an appropriate tailings disposal method (Coumans and MACEC 2002). On February 16, 2000, however, the review committee decided to approve the STD proposal of Marcopper. But Dr. Batac-Catalan was not able to attend the said meeting as she called in sick on that day. Two other committee members did not sign the decision and Dr. Batac-Catalan left the review committee. She sent a letter to then DENR Secretary Cerilles saying that tailings released into ocean would be difficult to manage should something go wrong and Marcopper was not able to demonstrate that STD would not result in environmental damage (Coumans and MACEC 2002). Further, Dr. Batac-Catalan expressed worry over the metal leaching into Marinduque's food chain that can affect the livelihoods and health of residents. The controversial decision of the review committee, however, was not enforced by the DENR. Instead, the DENR officials decided to wait for the findings of another review by an independent assessment team.

The anti-reflexive actions of Marcopper and PDTs are consistent with a Promethean outlook that prioritises the growth of mining operations even at the expense of the environment. Critics of Marcopper believe that they favoured STD because it is a cheaper option than other methods (Coumans 1999a). PDTs and PDI, however, did not cite cost efficiency as a reason for favouring submarine tailings disposal (Placer Dome Technical Services (Philippines) Limited and Placer Dome Inc. 1997). The instrumentalisation of expertise by Marcopper and PDTs, and some government regulators, shows a lack of genuine concern for environmental issues that is underpinned by corporate self-interest.

## **5.2. Inclusive knowledge production: setting conditions for ecological reflexivity**

The local environmental movement that manifested elements of green politics countered the anti-reflexive behaviour of Marcopper and some administrators, particularly in the manipulation of expert knowledge in EIA. The movement produced environmental knowledge from below that included local knowledge and formal scientific knowledge. The movement countered the anti-reflexive tendencies of Philippine EIA policy and practice, with their almost exclusive reliance on technical and academic experts who have obligations to mining companies who hire them.

A careful watch on the EIA process in the Philippines would be necessary to enable projects with significant environmental impact such as industrial mining to manifest signs of ecological reflexivity. Considering the oligarchic patrimonial characterisation of the Philippine state (Hutchcroft 1998) and the convergence of political and economic interests in mining (Nem Singh and Camba 2020), the mining industry, as part of a powerful oligarchy, can assert its interests over a weak bureaucracy, such as the Environmental Management Bureau (EMB) which regulates EIA processes for development projects. In the EIA process, the power of the mining industry is amplified by its role as direct contractor of EIA consultants who prepare the environmental impact statement (EIS) submitted to the EMB.

With a weak bureaucracy, mechanisms for transparency, review, and accountability of the EIA process can be ineffective. In reviews of the Philippine Environmental Impact Statement System implementation, a weak bureaucracy manifests in limited human and monetary resources of the EMB and the tokenism or perfunctory performance of the EIA (Tuyor et al. 2007; Bravante and Holden 2009). Apart from a weak bureaucracy, there are other issues that make transparency, review, and accountability difficult. Transparency becomes an issue when EIA results come in the form of voluminous reports oriented towards baseline data that can detract from real issues (Tuyor 2007) and project proponents have few requirements for publicizing information (Camba 2016). The process also provides few opportunities for public participation (Bravante and Holden 2009). Review of the EIA process becomes difficult when decision-making is centralised (Tuyor et al. 2007) and concentrated in the EMB (Camba 2016), and there is a lack of systematic feedback (Tuyor et al. 2007). In addition, the processing times have been reduced (Camba 2016) with the minimum amount of inconvenience to the project proponent (Bravante and Holden 2009). Finally, accountability becomes an issue given the contractor-payee relationship between mining companies and EIA consultants. This relationship calls into question the legitimacy of expert findings and recommendations in the EIS because the study is commissioned by the mining company (Camba 2016).

The power of the mining industry over the bureaucracy and the government regulators' lack of resources to implement mechanisms to ensure the reliability and objectivity of EIA consultants' findings hinder the reflexive potential of administrative rationalism. In

order to adequately recognise, rethink, and respond to environmental issues, the EIA process should involve expert knowledge and bureaucratic governance based on reliable and objective processes and findings.

One of the things made clear by the 1996 spectacular disaster is government regulators' shortcomings in the EIA process. In its post-disaster assessment, the UN Mission pointed out problems in the EIA process, environmental risk assessment and management, and environmental management, and criticised Marcopper's evident lack of priority of environmental management (United Nations Environment Programme 1996). The disaster could have been averted had government regulators ensured the environmental compliance of Marcopper and PDI. Then DENR Undersecretary La Viña admitted the shortcomings of government regulation. "Why did you approve a mining (operation) like that? It was so risky. Why did you approve the tunnel? We did approve the tunnel also, but the defense of our staff was, they thought they would plug completely," he explained, referring to the unconventional sealing of the tunnel of Tapian pit with a cement plug (De la Cruz 2017, para. 29). This information deficit could have been addressed with increased monitoring but government had limited resources, he added. This scenario illustrates the limited reach of administrative authority in EIA practice. Holden and Bravante called this "tokenism," where mining projects are seemingly assessed for environmental effects while proponents ultimately expect approval (2009, 523). Whereas the local environmental movement did not have much role in the EIA that led to the approval of the plugging of the Tapian pit tunnel that failed, the movement stepped up after the disaster amid the implementation deficit in the EIA process by being critical of the actions and biases of Marcopper, PDTS, and the DENR particularly the MGB.

The strategies of Marinduque's environmental movement and its allies could be seen as efforts to set conditions for the components of ecological reflexivity. Green politics after the disaster recognised vulnerable and complex ecosystems and valued the inclusion of other knowledges, particularly local knowledge, in environmental decisions. Aside from technical rationality, other knowledges, particularly affected residents' local environmental knowledge, were given due consideration in the campaign against STD and in environmental knowledge production from below. The movement justified the campaign because of local knowledge of the effects of STD practice in Calancan Bay,

where Marcopper polluted the waters. The movement also justified its opposition based on the STD policy and practice in other countries, particularly in Canada, where it had been either banned or highly restricted. Direct environmental knowledge from below, such as environmental impact missions, is often prompted by grievances from mining-affected residents, that opens up impact assessment from the usual control of industry and bureaucracy.

Due to the strong ecological and participatory commitments of green politics, the environmental movement in Marinduque was able to promote conditions that are conducive for ecological reflexivity. The disaster's spectacular features facilitated the recognition of the weaknesses of environmental governance in Philippine industrial mining, particularly on the implementation deficit of the Philippine EIS System, where a mining company with more resources can undermine a weak bureaucracy. The environmental movement scrutinised the background of industry experts and exposed their partiality to STD, the favoured disposal option of Marcopper and PDTS. This resulted in a rethinking of the practice of letting the mining company initiate environmental knowledge production by hiring EIA experts whose findings may not undergo proper scrutiny by government regulators. The response was the unprecedented hiring of the independent assessment team led by the USGS, paid for by the national government and chosen by the provincial government. This creates conditions for ecological reflexivity because independent assessments can be capable of serious inquiry without being beholden to powerful interests, such as industry. While this is a gain for the environmental movement in Marinduque, it is also worth recognising that this is a single case and not necessarily applicable to the Philippine EIS System more broadly.

## **6. The aftermath of the spectacular mining disaster to mining-based development**

After the spectacular mining disaster, there were some developments in Philippine industrial mining that were consistent with discourses that can counter Promethean commitments. These changes are: reforms in policy statements, industry and government commitments, stricter regulation; and civil society vigilance. However, these developments are limited by other developments that are consistent with the Promethean discourse: policy statements reinforcing mining-based development, more mining disasters.

## **6.1. Countering Promethean discourse**

### **6.1.1. Reforms in policy statements**

The government changed policy statements to adopt or emphasise: 1) sustainability; 2) public participation; 3) environmental and social risk compensation funds; and 4) the independence of experts, and transparency and monitoring of EIA processes. These changes are associated with the sustainable development discourse and the environment-problem solving discourses.

First, sustainability was emphasised in the revised implementing rules of the 1995 Mining Act released in December 1996, after the mining disaster. The revised rules included new governing principles that emphasised sustainability in mining and a new objective towards ensuring the steady supply of minerals for present and future generations (DENR Administrative Order 40 1996).

Second, public participation and funds for environmental and social risks were included in the revised implementing rules of the Philippine Environmental Impact Statement System (PEISS) released in December 1996. New terms and requirements were introduced. The revised Implementing Rules and Regulations (IRR) refers to an EIA Procedural Manual which would provide detailed guidelines on public participation, social acceptability, the EIS review criteria, and the scoping procedure. A funding requirement—the Environment Guarantee Fund (EGF)—for the mining company proposing the project was established. The EGF was introduced to compensate the victims of the 1996 Marcopper mining disaster, though it was not yet in the IRR yet at the time. This fund is supposed to cover the costs of prospective damage that may be caused by a project deemed to have significant public risk.

Finally, revised policy statements included independence of experts, and transparency and monitoring of EIA processes. The revised PEISS implementing rules included a statement describing the EIA Review Committee as properly composed of “independent” experts and professionals organised by government

regulating bodies. Environmental Risk Assessment using scientific methods was also included as a requirement. A Multipartite Monitoring Team (MMT) was also introduced to monitor a project's operations. The team's activities would be funded by the Environmental Monitoring Fund that would be committed by a proponent when they submit their EIS. (DENR Administrative Order 37 1996).

### **6.1.2. Industry commitments**

After the 1996 spectacular mining disaster, industry responded with commitments that can align with sustainable development and environmental-problem solving discourses.

Soon after the mining disaster, the industry and government launched efforts to regain the industry's reputation. In 1997, the mining industry and mining professional associations adopted the Philippine Mining Industry's Commitment to the Environment, which states that "mining activities shall be managed in a technically, financially, socially, culturally and environmentally responsible manner to promote the sustainable development and the general welfare of the country" (Cabalda et al. 2002, 96). The main commitments include: prioritising environmental management, establishing an environment office for each mine, adopting best practice in environmental management, establishing partnerships with communities, enhancing environmental research and development, and conducting progressive rehabilitation of mining sites. In the same year, members of the Chamber of Mines of the Philippines (COMP) signed the Code of Conduct for the Environment. The Code stipulates a commitment to: sustainable development; environmental responsibility; social responsibility; risk management; information to communities on industry performance and implementation of the Code; monitoring and improvement of practices; and rehabilitation and decommissioning (Cabalda et al. 2002).

The industry and government commitments after the mining disaster complemented the "responsible mining" project of the international mining industry. In 1998, major international mining companies embarked on this project in order to seriously address issues of environmental damage and social

acceptability. The project is a two-pronged approach (Rasch 2013). One involves strengthening technical operations for environmental compliance with government requirements. The other is a development approach to gain social acceptability primarily from the host and surrounding communities of a mining site and, broadly, from the public. Consistent with its earlier commitments, the COMP adopted the “responsible mining” project as well.

These commitments by industry and the government serve as discursive and performative instruments to distance themselves from the previous controversial mining regime, punctuated by the 1996 spectacular mining disaster. The COMP also delisted Marcopper as a member of the association.

### **6.1.3 Strict regulation**

Government regulation became strict in the few years after the 1996 spectacular mining disaster. Former DENR Undersecretary Antonio La Viña (1996-1998) recalled receiving specific instructions from former President Fidel V. Ramos to be strict in mining regulation (De la Cruz 2017). As a result, the liberalised objective of the Philippine Mining Act of 1995 was constrained by strict regulation. During La Viña’s time as undersecretary, there were no mining applications approved because the proponents were still adjusting to strict regulation and new policies, such as higher standards for rehabilitation and proof of financial capacity for rehabilitation (De la Cruz 2017). This development, however, was short-lived. The term of President Gloria Macapagal-Arroyo (2001-2010) reinforced mining-based development through liberal policies that are consistent with the Promethean discourse.

### **6.1.4 Civil society vigilance**

After the 1996 spectacular mining disaster, Philippine civil society groups continued their advocacy against the malpractices of the mining industry. At present, there are two national environmental coalitions that are concerned with industrial mining issues (Nem Singh and Camba 2016). The coalitions support the passing of alternative mining bills in parliament.

Formed in 1997, the first coalition is Kalikasan-People's Network for the Environment (PNE). It has about 200-300 civil society and indigenous organisations. The coalition is critical of the liberal mining regime that allows fully foreign-owned companies to operate mining projects in the country. Instead, it advocates for state-led industrial mining with a nationalist orientation (Nem Singh and Camba 2016). Aside from its primary mandates of coordination and advocacy, Kalikasan-PNE and its partners organise environmental impact missions in controversial mining development projects. They also build the capacity of local partners in environmental and social impact assessments. Civil society groups realised this need to build capacity in scientific processes to counter the findings of industry experts (Camba 2016).

The other coalition was formed in 2004 in response to government and industry efforts to revitalise Philippine industrial mining. The coalition *Alyansa Tigil Mina* (ATM) or Alliance Against Mining has about 250 civil society and people's organisations. ATM advocates for the: scrapping of the Philippine Mining Act of 1995 and replacing it with an alternative mining law; revocation of the mining revitalisation policies of former President Arroyo; and a moratorium on large-scale mines (Alyansa Tigil Mina N.d.). ATM does not oppose large-scale mining per se, but is critical of the state policy that promotes foreign-controlled and export-oriented large-scale mining (Alyansa Tigil Mina N.d.).

Civil society vigilance is present even in what is considered to be one of the "best practices" of mining operations in the country. I will briefly illustrate this with the case of Didipio mine that is often flaunted as a shining example of responsible mining. The mine was named after its host village in Kasibu town, Nueva Vizcaya province. It is located in northern Luzon island, about 270 kilometres north east of the Philippine capital Manila. Its mining site covers about 975 hectares (Griffiths, Holmes, and Moore 2014). The previous mine operator, Climax Mining, started exploration in 1992 and entered into a Financial and Technical Assistance Agreement with the Philippine government in 1994. The twenty-five-year agreement allowed this fully foreign-owned mining company, as contractor, to operate in the country. There has been opposition to the mine from local residents and civil society groups since the beginning which resulted in several years of

delay of its full commercial operation which only commenced in 2013. Their mobilisation strategies range from protests and barricades to petitions, lobbying, and civil-society led environmental impact missions. These groups claimed environmental and social issues at various stages of Didipio mine's operations (CHR (IV) No. A2011-004 2011; Martin, Vettori, and McLeod 2007; Kalikasan PNE et al. 2014). However, there are also local groups that support Didipio mine's operations.

In keeping with the responsible mining project, Oceana Gold Philippines, Inc. (OGPI), the current operator of Didipio mine, claimed to be keeping its production at very low costs, while being committed to environmental rehabilitation, and social and economic development. From 2009 to 2016, Didipio mine received various awards from the environment department and the Philippine Mineral Industry Environmental Award (PMIEA), whose selection committee is composed of government and private sector representatives. The secretariat is headed by the Mines and Geosciences Bureau chief, under the environment department. On their 2016 awards, OceanaGold President and CEO Mick Wilks said "OceanaGold is honoured by this major achievement, reflecting our unwavering commitment to operating at the highest standards in health, safety, and environment for the long-term sustainable benefit of society in the Philippines. The Company is a leader for responsible mining and we firmly believe our Didipio Mine sets the benchmark for the same in the country." (OceanaGold 2016, 1)

Despite the accolades of Didipio mine, civil society opposition to the mine continues. When the mine operator's agreement with the government expired on June 20, 2019, oppositional groups advocated for the non-renewal of the agreement, which has not been renewed at present. The grounds for non-renewal include the observations of locals and the findings of various fact-finding and environmental impact missions (Commission on Human Rights [CHR] (IV) No. A2011-004 2011; Martin, Vettori, and McLeod 2007; Kalikasan PNE et al. 2014).

## **6.2. Enduring Promethean discourse**

### **6.2.1. More mining disasters**

Mining disasters are signs of Promethean commitments in mining. As we saw in the cases in this study, Marcopper's Promethean behaviour led to mining disasters. After 1996, other notable mining disasters happened in the country. This is an indication of things remaining the same in Philippine mineral resource governance. For example, in 2005, Lafayette Mining Limited's mine tailings spillage on Rapu Rapu island resulted in one of the worse mining-related fish kills in the country. More recently in 2012, mine waste from Philex Mining Corporation's operations discharged into the Balog Creek and Agno River in Benguet. This disaster unleashed the biggest volume of tailings spill in Philippine history to date.

### **6.2.2. Mining revitalisation policy**

In previous mining policy statements, liberal economic commitments are consistent with the Promethean discourse. This happened again after 1996. The term of President Gloria Macapagal-Arroyo (2001-2010) introduced liberal mining policies in 2004 that reinforced the Philippine Mining Act of 1995's mining-based development. These policies were strengthened by the Supreme Court decision in December 2004 to uphold the constitutionality of the Philippine Mining Act of 1995, particularly its provisions for FTAA. This decision supported the mining law's mining-based national development strategy. Initially, the Supreme Court ruled that the FTAA provisions are unconstitutional, in January 2004. The DENR's MGB, the private respondents, and the COMP appealed the court decision. A constitutional review and oral hearings were held in July 2004, with the Supreme Court reversing its decision later that year (Chaloping-March 2014).

The government also established an industry award program. I interpret this as showcasing the technological capability of the industry in efficient production and environmental rehabilitation that can further justify the state's mining-based development that is consistent with the Promethean discourse. In February 1997,

Presidential Executive Order No. 399 established the Philippine Mineral Industry Environmental Awards (PMIEA). The categories are mostly technical awards with the exception of one social development award. The law encourages the industry to perform its best by giving it due recognition for its efforts. Some recipients of multiple awards from PMIEA are Rio Tuba mine in Palawan operated by Rio Tuba Nickel Mining Corporation, and Didipio mine in Nueva Vizcaya operated by Oceana Gold Philippines, Inc.

## **7. Chapter conclusion**

**In this chapter, I argued that, alongside oligarchic patrimonialism that corrupts bureaucracy, Promethean conditioning led to the spectacular mining disaster and green politics was helpful in setting conditions for ecological reflexivity.**

Marcopper's mine development decisions, conditioned by the Promethean discourse, led to the spectacular mining disaster. Its faith in engineering technology manifested when it converted the Tapani mine pit into a tailings reservoir by sealing its tunnel with a cement plug, which is an unconventional engineering design. However, Marcopper's Promethean conditioning appeared limited when it invoked a fatalistic notion of nature to exonerate itself from blame for the cement plug failure that caused the toxic spill.

The spectacle of the disaster elicited immediate response from the different actors, including government and industry. Despite this, Marcopper and PDI, and some government regulators were anti-reflexive as their responses did not seem earnest. Consistent with green politics, the local environmental movement countered their anti-reflexive behaviour as the movement recognised vulnerable and complex ecosystems and valued the inclusion of local environmental knowledge in EIA. The movement pushed for the appointment of an independent assessment team to study the impact of the disasters and offer rehabilitation measures for Marinduque. The actions of the movement helped to set conditions for ecological reflexivity.

The aftermath of the spectacular mining disaster to Philippine mineral resource governance saw developments that countered the Promethean discourse suggested some progress in the

prospects for ecological reflexivity, but the occurrence of more mining disasters and reinforcement of liberal mining policies also confirmed the limits of this progress.



## Chapter 9

### Conclusion

In this concluding chapter, I revisit my three-part research question and summarise how this thesis answered these questions. Then I present the research findings and end with implications and recommendations for future research.

#### 1. Research question

The starting point for my investigation was this research question: **How do environmental discourses influence responses to mining disasters in both the short- and long-terms?**

Based on the findings and analysis, this is the answer to the main question: **The Promethean conditioning of policies and institutions led to mining disasters; consistent with green politics, the local environmental movement anticipated these disasters and mobilised in their aftermath, helping set conditions for ecological reflexivity. However, an institutional response that varied from resistant to weak and inconsistent severely constrained reflexivity.**

#### 1.1. Subsidiary questions

There are three parts to this question.

- **Conceptual / empirical question:** What is an appropriate taxonomy of environmental discourses in non-industrial settings, and what configuration do we find in the history of mining in the Philippines?
- **Explanatory question:** How can we explain the conflicts in Philippine mining, especially in the aftermath of mining disasters, in terms of the evolution of the configuration of environmental discourses?
- **Normative question:** If effective response to disaster can be captured in terms of ecological reflexivity, to what extent does the configuration of environmental discourses promote or hinder ecological reflexivity?

## 1.2. Scholarly contributions

Each question was a contribution to existing literature.

- The **conceptual / empirical question contributed** to the environmental discourse scholarship by **expanding its taxonomy**. The existing taxonomies were constructed using industrial society as a reference point. Like many other scholars of environmental discourses (Hajer 1997; Fischer and Hajer 1999; Litfin 1995), Dryzek's taxonomy focused on industrial societies currently committed to perpetual growth and material welfare. This is understandable given that environmental discourses have been articulated in relation to industrialism. For example, major works on environmental discourses in the context of industrialism include issues surrounding acid rain in the Netherlands (Hajer 1997), sustainable development (Fischer and Hajer 1999), and international agreements on the ozone layer (Litfin 1995). However, this means that the classification of environmental discourses excludes discourses that proliferated before industrialisation and discourses that enabled the establishment of industrial society. To contribute to the expansion of the existing taxonomy, I analysed discourses in non-industrial settings, notably an indigenous sustainability discourse and a non-industrial cornucopian discourse. This is a vital contribution because it enriches our understanding of how environmental discourses are constructed in a range of contexts with historical particularities, even though they were only discussed in Chapter 3 during the pre-colonial and colonial periods of Philippine mining. Another **conceptual contribution** was that critically appropriating the discourses to the Philippine context also revealed the **interaction of the discourses with local features** that were not included in Dryzek's discourse analysis. For example, state intervention at times (instead of markets that promote innovation) went alongside the Promethean discourse.
- The **explanatory question contributed** to the political economy and geopolitical scholarships on conflicts in natural resources. By using an environmental discourse approach in analysing conflicts in Philippine industrial mining, I was able to make thoroughgoing interpretations of the epistemic underpinnings of these conflicts, particularly on assumptions about nature, and natural and social

relationships. These **epistemic issues about the environment are not often highlighted** in political economy and geopolitical scholarships.

In Philippine mining, the political economy scholarship on *intra-elite competition* in mining (Lopez 1992; Camba 2015) shows that the economic interests of elites interacted with nationalist policies, and the ‘politics of plunder’ (Aquino 1999) and crony capitalism (Kang 2002; Manapat 1991) during the dictatorial regime of Ferdinand Marcos, Sr. (1965-1986). The *intra-elite competition* literature shows that the political system at one point may have disadvantaged the mining industry (Camba 2015) or favoured domestic mining owners over foreign ones (Lopez 1992; Camba 2015), but, ultimately, the colonial state and Philippine state often supported industrial mining as an instrument for national economic growth.

Meanwhile, *elite versus non-elite conflicts* in Philippine political economy scholarship shows the opposition of anti-mining communities and civil society groups to large-scale mining promoted by the state (Tujan and Guzman 2002; Nem Singh and Camba 2016; Wurfel 2006; W. N. Holden 2005; W. N. Holden and Jacobson 2013; W. Holden, Nadeau, and Jacobson 2011; W. Holden and Ingelson 2007; Camba 2016). These critics of mining justify their claims by pointing to ecological tragedies, such as the infamous 1996 Marcopper Mining Disaster (Tujan and Guzman 2002; Wurfel 2006; W. N. Holden 2005). In terms of social costs, anti-mining groups claim that neoliberal policies in mining that make mining frontiers more accessible enable coercive and violent practices that often dispossess mining-affected communities, especially indigenous peoples (Tujan and Guzman 2002; Nem Singh and Camba 2016; Wurfel 2006; W. N. Holden 2005; W. Holden and Ingelson 2007) through manipulated consent, physical displacement, destruction of sacred sites, environmental impacts, and militarisation (W. Holden, Nadeau, and Jacobson 2011). The political economy literature shows that anti-mining groups oppose mining because of the huge local environmental and social costs that outweigh the economic benefits for the country and its people (Tujan and Guzman 2002; W. N. Holden 2005; Wurfel 2006).

Geopolitical analyses of Philippine mining suggest that natural resource abundance functioned as a *motivation* and an *enabler* in security issues. In Philippine colonial times (1565-1941), some scholarship suggests the function of natural resources as *motivation* for colonial expansion from documentation of Spanish and American colonisers' explicit desire to exploit the archipelago's natural resources (Lopez 1992; Camba 2015). Consequently, natural resources *motivated* the conflict between the colonisers and the colonised (Lopez 1992; Camba 2015; Habana 2001; Barclay 2003; Scott 1974). Today, natural resources functioned both as an *enabler* and as a *motivation* in armed conflict. Holden and Jacobson (2007) suggest that Philippine mining can *enable* armed rebellion, as a source of funding through extortion, and can be a *motivation* for some members of anti-mining communities to join the rebellion. The literature also suggest that anti-mining sentiments *motivate* attacks on large-scale mining operations that, in turn, *motivates* government authorities to militarise these host indigenous communities of mining operations (W. N. Holden and Jacobson 2007; W. Holden, Nadeau, and Jacobson 2011).

An environmental discourse approach provided a clearer account of the environmental knowledge dimensions of the conflicts described in the political economy and geopolitical literatures. For example, in the political economy literature on intra-elite competition in Philippine mining, the state's development paradigm went alongside the Promethean discourse that sees nature as a resource at the service of the needs and interests of human society, such that environmental problems can be solved by human ingenuity (Dryzek 2013). Civil society opposition was explained using green political discourse (Dryzek 2013) that rejects a purely instrumental view of nature but instead sees the close relations between nature and humans, and often promotes an inclusive or a participatory approach in environmental governance.

- The **normative question contributed** to scholarship that look at responses to industrial disasters that usually considers human welfare and, in a limited way, the environment. By using ecological reflexivity, I contributed a normative evaluation of Philippine industrial mining using a **transformative ideal**, instead of reformist action. I made a case for ecological reflexivity because, if we want to avert mining

disasters in the future, a radical transformation of mineral resource governance is needed.

There is limited scholarship on responses to industrial disasters and the few existing studies have human welfare considerations and some environmental considerations. The works of Curran (1993) and Lindon, Canare, and Mendoza (2014) seek to address social inequality in the aftermath of industrial disasters due to mining operations. In the aftermath of the 1984 Wilburg coal mine disaster in the United States, Curran (1993) interpreted legislative reforms in occupational health and safety using class analysis. Curran (1993) found that legislative reforms were used to assuage workers' demands, instead of addressing deeper causes of the disaster such as the structural inequality in labour and production in the coal mining industry. In the Philippines, Lindon, Canare, and Mendoza (2014) analysed the 1996 Marcopper mining disaster using a causality chain framework premised on mining's potential to contribute to inclusive growth. Their findings showed that the disaster demonstrates a disruption in the causality chain that constrained mining's potential contribution to inclusive growth (Lindon, Canare, and Mendoza 2014). These studies are valuable in explaining the events surrounding the disasters and in promoting more equitable distribution of benefits from resource extraction. But such studies lack serious consideration of the environment.

Other studies look at responses to industrial disasters underpinned by prescriptions with environmental considerations. Yet these studies only seek to reform, not transform, the dominant practices and values of industrial society. In the aftermath of the 2015 mining disaster in Brazil, Garcia et al. (2017) advocated for an environmental bond policy that adequately considers risks and the worth of environmental services, that can ensure resources for environmental rehabilitation (Garcia et al. 2017). In the Philippines, Bravante and Holden (2009) proposed a "more meaningful EIA system" or more inclusive form of development (Bravante and Holden 2009, 543). While a meaningful EIA system for Bravante and Holden (2009) includes biodiversity considerations, their proposal focuses more on human development and does not seriously challenge the industrial roots of mining disasters.

These scholarly works reviewed on industrial disasters do not have prescriptive underpinnings that are environmentally transformative. A transformative perspective can provide pathways for veering away from industrial society's values that lead to industrial disasters. I provided this normative contribution in studying industrial disasters by analysing responses to shocks to Philippine mining disasters using the ecological reflexivity concept that was developed by Dryzek and Pickering (2019). They identified non-human nature as an important actor in exercising formative agency in the Anthropocene (Dryzek and Pickering 2019). This study showed how non-human nature can be an actor in the context of responding through discourses to shocks due to mining disasters.

## 2. Research findings

To answer the conceptual and empirical questions of this study, I present my major findings below.

### 2.1. Conceptual / empirical findings (See summary in Table 1 below.)

In this study, I adopted some of the environmental discourses in Dryzek's taxonomy, specifically: Promethean discourse, administrative rationalism discourse, limits discourse, sustainable development discourse and green political discourse.

- The **Promethean discourse** believes in a forgiving nature and the strong role of capital-intensive technology as it dismisses scarcity and environmental constraints. The discourse has been enduring through from colonial to contemporary periods, though at times its influence has been limited by other discourses.
- The **administrative rationalism discourse** believes in human capacities organised into the administrative state, which in turn organises expert knowledge to find solutions to environmental problems. In Philippine EIA policy statements and practice, administrators have a strong role in environmental decision-making and in organising expert knowledge. However, in this study, the behaviour of politicians

and the mining corporation, often conditioned by the Promethean discourse, inhibits the effective deployment of administrative rationalism.

- The **limits discourse** espouses the idea that resources are finite and so sees the need for seriously halting the insatiable desire for economic growth through excessive production and consumption. The belief in finite resources is based on scientific knowledge, and curbing economic growth often means a strong, centralised state though of a sort the world (and still less the Philippines) has not seen. In the Philippines, this discourse is limited to policy statements and there is no clear indication of influence upon programs and practices.
- The **sustainable development discourse** is imaginative and asserts that economic growth, environmental protection, and social welfare can be made mutually reinforcing. This discourse was popularised in the 1987 Brundtland report which, unfortunately, asserts rather than demonstrates that economic growth, environmental protection, and social welfare can reinforce each other. Similarly, the Philippine state's policy statements provide strategies to promote each of the three pillars of sustainable development but does not clearly show how each can reinforce the other. This creates tensions between sustainable development and other discourses. In fact, the Promethean discourse overrides sustainable development in mining policy.
- The **green political discourse** recognises complex and vulnerable ecosystems and the importance of inclusive and participatory governance. The Philippine environmental movement manifests these features of the discourse through its advocacy, organising, and research work.

In addition, I proposed new environmental discourses that are appropriate when taking a long view of Philippine mining, with non-industrial and developing country features. The contributions I made to the environmental discourse taxonomy here are the indigenous sustainability discourse and the non-industrial cornucopian discourse (see Chapter 3).

- Some of the elements of the **indigenous sustainability discourse** characterise close nature-human relations and subsistence use of natural resources. Although the indigenous sustainability discourse in the Philippines is still present today in various forms, the discourse was used as a conceptual tool in analysing the practices of early Filipino miners in the Spanish and American colonial periods.
- The **non-industrial cornucopian discourse**, similar to the Promethean discourse, enabled colonial and imperial expansion. A major difference with the Promethean discourse is that the non-industrial cornucopian discourse does not see it necessary to develop beyond labour-intensive technology because of its absolute belief in natural abundance.

At the beginning of this project, I did not set out to construct discourses to expand environmental discourse taxonomy. But owing to the iterative process of interpreting my data, I discovered the limitations of existing taxonomies that led me to develop the indigenous sustainability discourse and the non-industrial cornucopian discourse.

## 2.2. Explanatory findings (See summary in Tables 1 and 2 below.)

### 2.2.1. Discourse configuration and policy statements

In Philippine policy statements, the main feature of the discourse configuration is the **enduring domination of the Promethean discourse**. In Chapter 3, we saw that since the birth of Philippine industrial mining until the 1960s, the Promethean discourse dominated state policies surrounding mining. In Chapter 4, however, we saw that other environmental discourses then appeared in policy statements that were in tension with the Promethean discourse. In Chapter 7, we saw that policy statements in mining have continued to be strongly configured around a mining-based development strategy, consistent with the Promethean discourse, which can undermine any challenge from other environmental discourses.

Across time, the adoption in policy statements of other discourses—limits, administrative rationalism, sustainable development—were always countered by

the reinforcement of the Promethean commitments of the state in mining policies. In the Philippine case, an instructive finding is the close association of state intervention with Promethean commitments. State intervention is not really part of the Promethean discourse, perhaps owing to the political experiences and commitments of its proponents, that differs in the Philippine context. Alongside the state's Promethean commitments, corruption in the bureaucracy and neoliberal features in policies also countered discourses that challenged the Promethean discourse.

### 2.2.2. Discourse configuration and mining disasters

*Slow-onset mining disaster in Calancan Bay (1975-1991).* For the slow-onset mining disaster, the Promethean discourse **undermined** and sidelined green politics and administrative rationalism. The local environmental movement, that embodied green politics, **responded** throughout to the slow-onset features of the disaster through mobilisation. Government response was **delayed** while the Promethean commitments of Marcopper dismissed the movement's claims on environmental degradation. Alongside the Promethean discourse, state intervention, crony capitalism, and a weak bureaucracy undermined green politics and administrative rationalism.

*Sudden onset yet diminished mining disaster in Mogpog River (1993).* Locals opposed the building of the dam during the planning stage because of their fears of the risks involved to their environment, health, safety, and livelihoods. Marcopper, with its Promethean conditioning, countered the claims of the movement. The dam was built and eventually broke which resulted in the tailings spill. The Promethean conditioning of Marcopper **led** to underplaying risks and so to the dramatic mining disaster. Consistent with green politics, the local environmental movement **immediately responded** when the disaster struck Mogpog. Despite the sudden onset features of the disaster, there was **no response** from the national government and there was a **denial of responsibility** from Marcopper and PDI.

*Spectacular mining disaster in Boac River (1996)*. The Promethean conditioning of Marcopper again **led** to the sudden onset and spectacular mining disaster as it failed to take risks seriously. MMC's faith in engineering technology was unwavering when it implemented the unconventional design of placing a cement plug on the tunnel of a mine pit to convert it into a tailings reservoir. The cement plug failed, which caused the tailings spill. Largely due to the spectacular features of the disaster, there was **immediate response** from locals and the environmental movement, national government, and MMC and PDI. Despite being more responsive to the plight of the victims, MMC and PDI still **denied any responsibility**. Promethean conditioning went alongside oligarchic patrimonialism that corrupts the bureaucracy.

All three disasters reveal that the Promethean conditioning or commitments of Marcopper led to the mining disasters. This confirms the assumption of this study that entrenched worldviews and practices lead to disasters, in some ways akin to path dependency. This means that the occurrence of mining disasters in the Philippines and other countries until today indicates the endurance of the Promethean discourse. This might be a pessimistic assertion but there is also some reason for optimism. In the Philippine case, no matter how dominating the Promethean discourse was, there were openings for other discourses to challenge its domination. In most cases, these were unsuccessful attempts. For example, this was true for the sustainable development discourse and the limits discourse in policy statements. It was also true for green politics in its unsuccessful bid to avert mining disasters from happening. In other cases, there were limited gains. For example, this was true for green politics when government responded to its urging to take notice and to investigate the environmental degradation in Calancan Bay. My optimism lies in the realisation that these challenges will continue and that possibly, in an incremental manner, the gains can increase through time.

### **2.3. Normative analyses** (See summary in Table 2 below.)

To answer the normative question of this study, I present my normative analyses below.

*Slow-onset mining disaster in Calancan Bay (1975-1991)*. Elements of green politics and administrative rationalism were **helpful in setting conditions** for ecological

reflexivity. The locals and the environmental movement recognised signs of environmental degradation early on. They urged government to take action. Administrators pushed for the conduct of environmental impact assessment by experts. However, Marcopper and the Marcos regime, consistent with the Promethean discourse, **undermined, sidelined, and overruled** the claims of the local environmental movement and administrators. The slow-onset features of the disaster **did little to make the national government and MMC recognise** the environmental issues.

*Dramatic mining disaster in Mogpog River (1993).* Elements of green politics were **helpful in setting conditions for the recognition** of environmental issues. Local residents were aware of the risks of building the dam that eventually failed. They mobilised against Marcopper from the planning stage of the dam until the aftermath of the disaster. Conditioned by the Promethean discourse, Marcopper held on to its faith in their design and pushed through with building the dam. However, Marcopper **abandoned its Promethean commitments** when it appealed to a fatalist notion of nature in order to exonerate itself from blame. The dramatic features of the disaster **did little to make national government and Marcopper recognise** the environmental issues.

*Spectacular mining disaster in Boac River (1996).* Elements of green politics were **helpful in setting conditions for the recognition** of environmental issues. In the short-term, the spectacular features of the disaster **helped various actors recognise** the nature and severity of environmental issues. But despite this recognition, Marcopper still denied any wrongdoing. This showed the limits of spectacle in making a corporation respond substantively to a disaster. Further showing the limits of spectacle for substantive responses is in the long-term. The aftermath of the spectacular mining disaster to Philippine mineral resource governance in the long-term indicate that other discourses that challenge the Promethean discourse are limited by indications of the endurance of Promethean policy and practice.

In this study, I qualified that I did not do a strict application of ecological reflexivity to mining in my empirical research because that would be a high bar for a business activity that is not expected to behave in an environmentally-friendly manner. My primary aim was to identify the configuration of discourses and responses to shocks, and whenever

possible, reflect on the adequacy of these responses in terms of pathways in setting conditions for ecological reflexivity. Because of this realistic goal, it did not come as a surprise that Marcopper was either unreflexive or anti-reflexive as it stuck to its Promethean commitments and dismissed environmental risks that eventually led to the disasters.

What is more instructive are the pathways, though limited, that emerged that tried to challenge the Promethean discourse. Committed to green politics, the local environmental movement had some limited success in making government take action by conducting preliminary investigations in Calancan Bay as the slow onset disaster was unfolding. The bureaucrats found environmental degradation in their preliminary investigation and decided the conduct of a full environmental impact assessment (EIA). If deployed well, EIA can recognise environmental problems, if present. In other cases, the movement's advocacy during the planning stage of the submarine tailings disposal and the Maguila-guila Dam help in setting the conditions for recognising environmental risks. These pathways reveal that even in a constrained setting for ecological reflexivity like industrial mining, the anti-reflexive and unreflexive reach of the Promethean discourse is not all-too formidable.

I summarise the **conceptual/empirical and explanatory findings**, and **normative analyses** in Tables 1 and 2 below.

### **3. Implications for response to mining disasters**

I offer three implications for responding to mining disasters. One concerns the need to capitalise on the power of a spectacular disaster to help make actors more aware of risks and more responsive to environmental signals. This is a lesson for agents, e.g. experts and social movements, in framing environmental impacts, whether subtle or spectacular, that can make them generate substantive responses from different actors. This capacity of effective framing is important in light of what happened in the dramatic mining disaster in Mogpog River whose impacts did not generate response from national government and Marcopper.

However, spectacular disasters are rare. More common but still damaging are everyday disasters that also need to be sufficiently addressed. The second implication of the findings of

this study is therefore the need to make good use of the contributions of local environmental movements in helping to create the conditions for ecological reflexivity. This study showed that the movement was sensitive to different kinds of environmental signals, from subtle to the dramatic and spectacular. Rather than dismiss, downplay, or oppose the concerns raised by movements, dominant institutions (notably government and corporations) should recognise their legitimate place in decision making processes.

But dominant institutions are not the only ones who have to reach out and engage with others. Therefore, the third implication is that environmental movements should engage productively with dominant institutions. In the case of the slow onset mining disaster in Calancan Bay, the local environmental movement had a small gain in terms of successfully making bureaucrats conduct a preliminary investigation that led to a decision to conduct a full EIA. This demonstrates that there can be opportunities for responsiveness in some areas of dominant institutions.

#### **4. Recommendations for future research**

The research objectives of this study can be useful for 1) comparative research, 2) application in broader policy areas, 3) application in other environmental areas.

First, it would be instructive to compare across industries or sectors in the Philippines, for example between mining and forestry. Another worthwhile comparison is between the Philippine mining experience with that of mining in other developing countries. Second, the research objectives of this study can be applied to broader policy areas such Philippine environment and natural resources in general, rather than just mining. The third recommendation is a counterpoint to this study that largely uncovered systemic failure when it comes to reflexivity. It would be interesting to seek out success stories—if there are any in the Philippines, perhaps on climate change and its impacts or in disaster risk reduction.

Table 1. Environmental discourse taxonomy and configuration of environmental discourses

<i>Substantive chapter number and title</i>	<i>Environmental discourse taxonomy</i> <b>(Conceptual / empirical question)</b>	<i>Configuration of environmental discourses</i> <b>(Explanatory question)</b>
Chapter 3 Industrialising Philippine mining, Promethean discourse domination (1565-1965)	Indigenous sustainability discourse* Non-industrial cornucopian discourse* Promethean discourse (statist)	Full development of industrial mining was accompanied by the <b>domination</b> of the Promethean discourse.  This meant a <b>shift</b> from a non-industrial cornucopian discourse and the <b>undermining</b> of the indigenous sustainability discourse.
Chapter 4 Environmental concerns permeate Philippine policies (1965-1992)	Limits discourse Promethean discourse (statist) Administrative rationalism discourse	In policy statements, the administrative rationalism discourse <b>relieved tensions</b> between the limits discourse and the Promethean discourse.

<p>Chapter 5</p> <p>Promethean interests dominate in a slow onset mining disaster: The case of Marcopper and Calacan Bay (1975-1991)</p>	<p>Promethean discourse (statist)</p> <p>Green political discourse</p> <p>Administrative rationalism discourse</p>	<p>The Promethean discourse <b>undermined</b> both green politics and administrative rationalism.</p>
<p>Chapter 6</p> <p>The Promethean discourse led to a sudden onset mining disaster: The case of Marcopper and Mogpog River (1993)</p>	<p>Green political discourse</p> <p>Promethean discourse (statist)</p> <p>Administrative rationalism discourse</p>	<p>The Promethean conditioning of Marcopper <b>led</b> to the sudden onset mining disaster.</p>
<p>Chapter 7</p> <p>Promethean discourse overrides sustainable development in national mining policy</p>	<p>Sustainable development discourse</p> <p>Promethean discourse</p>	<p>The Promethean discourse <b>overrides</b> sustainable development discourse in mining policy statements.</p>

<p>Chapter 8</p> <p>Promethean conditioning in a spectacular mining disaster: The case of Marcopper and Boac River (1996)</p>	<p>Promethean discourse (statist)</p> <p>Administrative rationalism discourse</p> <p>Green politics</p>	<p>The Promethean conditioning of Marcopper <b>led</b> to the spectacular mining disaster.</p>
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\*contribution to environmental discourse taxonomy

Table 2. Responses to mining disasters and lessons for ecological reflexivity

<i>Substantive chapter number and title</i>	<i>Responses to mining disasters</i> <b>(Explanatory question)</b>	<i>Lessons for ecological reflexivity</i> <b>(Normative question)</b>
<p>Chapter 5</p> <p>Promethean interests dominate in a slow onset mining disaster:</p> <p>The case of Marcopper and Calacan Bay (1975-1991)</p>	<p><b>Immediate response</b> from locals and the environmental movement</p> <p><b>Ambivalent and delayed response</b> from the national government</p> <p><b>Denial of responsibility</b> from Marcopper and PDI</p>	<p>Elements of green politics and administrative rationalism were <b>helpful in setting conditions</b> for ecological reflexivity.</p> <p>Elements of the Promethean discourse <b>undermined</b> the recognition of the environmental issues by actors who subscribed to other discourses.</p> <p>The slow-onset features of the disaster <b>did little to make the national government and Marcopper recognise</b> the environmental issues.</p>

<p>Chapter 6</p> <p>The Promethean discourse dominates in a dramatic mining disaster: The case of Marcopper and Mogpog River (1993)</p>	<p><b>Immediate response</b> from locals and the environmental movement</p> <p><b>No response</b> from the national government (no data found)</p> <p><b>Denial of responsibility</b> from Marcopper and PDI</p>	<p>Elements of green politics were <b>helpful in setting conditions for the recognition</b> of environmental issues.</p> <p><b>Abandoning its Promethean commitments</b> and subscribing to a fatalist notion of nature, Marcopper tried to exonerate itself from responsibility.</p> <p>Contrary to what might have been expected, the dramatic features of the disaster <b>did little to make national government and Marcopper recognise</b> the environmental issues.</p>
<p>Chapter 8</p> <p>Promethean conditioning in a spectacular mining disaster: The case of Marcopper and Boac River (1996)</p>	<p><b>Immediate response</b> from locals and the environmental movement, national government, and Marcopper and PDI</p> <p><b>Denial of responsibility</b> from Marcopper and PDI</p>	<p>Elements of green politics were <b>helpful in setting conditions for the recognition</b> of environmental issues.</p> <p>The spectacular features of the disaster <b>helped various actors recognise</b> the environmental issues.</p>

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## Appendix A

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### **Public speech and address**

Boac Mayor Roberto M. Madla to Boac constituents, Pahayag hinggil sa planong channel dredging ng Marcopper Mining Corporation sa Barangay Tabigue (Statement concerning the channel dredging proposal of Marcopper Mining Corporation at Barangay Tabigue), open letter, July 23, 1996, MACEC private collection (photocopy).

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## Appendix B

### Timeline of Relevant Events to Philippine Mining

<b>Date</b>	<b>Event</b>	<b>Regime</b>
1837	The Inspeccion General de Minas was formed through a royal decree.	Spanish Colonial
1846	Decrees of the Superior Civil Government include the Regalian Doctrine, that the state had control and ownership over all minerals and substances beneath all public and private lands.	Spanish Colonial
1900	The functions of the Inspeccion General de Minas were passed on to the Mining Bureau.	American Colonial
1902	The Philippine bill of 1902, also known as the organic act - was enacted with the majority of provisions on mining	American Colonial
1936	Gold producers created the industry lobby group Gold Mining Association, now the Chamber of Mines of the Philippines	American Colonial
1936	Commonwealth Act No. 136 was enacted that created the Bureau of Mines.	American Colonial
1936	Commonwealth Act no. 137 was enacted to provide for the conservation, disposition, and development of mineral lands and minerals	American Colonial
1949	The Chamber of Mines of the Philippines was revived, previously the Gold Mining Association,	Post-War Regimes
1965	Marcopper Mining Corporation was established.	Marcos Regime
1974	Village leaders sent petitions to the government opposing Marcopper's plan to dump mine tailings into Calancan Bay.	Marcos Regime
1975	Marcopper obtained its submarine tailings disposal permit that commenced a slow onset mining disaster.	Marcos Regime
1974	The Mineral Resources Development Decree of 1974 replaced the 1936 American colonial mining policy.	Marcos Regime
1977	Marcos issued The Philippine Environmental Policy and the Philippine Environment Code	Marcos Regime
1978	Marcos issued the Philippine Environmental Impact Statement System.	Marcos Regime
1980	Government regulators issued a cease-and-desist order to Marcopper's submarine tailings disposal. Marcos overruled the order.	Marcos Regime
1987	The newly-reorganized DENR began the formulation of the Philippine Strategy for Sustainable Development (PSSD).	Aquino Regime
1987	Aquino issued Executive Order No. 192 that created the Department of Environment and Natural Resources (DENR).	Aquino Regime

1988	The Pollution Adjudication Board issued a cease-and-desist order restraining Marcopper from ocean surface disposal. Marcopper issued legal threat; government reversed the order.	Aquino Regime
1990	DENR issued the Philippine Strategy for Sustainable Development Part 1 - A Conceptual Framework.	Aquino Regime
1990	Mogpog residents sent petitions to government against the proposed Maguila-guila Dam.	Aquino Regime
1991	Marcopper stopped surface tailings disposal into Calancan Bay and replaced it with a land-based reservoir.	Aquino Regime
1993	A sudden onset mining disaster struck Marinduque that severely affected Mogpog town due to the failure of Marcopper's Maguila-guila Dam.	Ramos Regime
1995	The Mining Act of 1995 replaced the Mineral Resources Decree of 1974.	Ramos Regime
1996	Another sudden onset mining disaster struck Marinduque that severely affected Boac town due to the failure of Marcopper's tailings reservoir.	Ramos Regime
1996	After the 1996 mining disaster, DENR issued Administrative Order No. 96- 40, a revised implementing rules of the 1995 Mining Act.	Ramos Regime
1997	Marcopper applied for a permit for submarine tailings disposal as part of its rehabilitation of Boac River.	Ramos Regime
2000	With the consistent opposition to STD, DENR's Mines and Geosciences Bureau assured the local environmental group in Marinduque that the bureau was not endorsing STD but was supporting the search for an independent assessment team that will explore various options for tailings disposal.	Estrada Regime
2004	Arroyo introduced liberal mining policies in 2004 that reinforced the Philippine Mining Act of 1995's mining-based development.	Arroyo Regime