Slow Violence and the Elusiveness of Space and Time

A case study of how the slow violence of Swedish toxic waste dumping shape environmental justice in Arica, Chile

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Abstract

This thesis analyzes a case of transnational environmental justice between Chile and Sweden following toxic waste exports in the 1980's. Thematic analysis is applied to explore concepts of time and space presented amongst the different actors. Drawing from decolonial environmental justice theory, the thesis compares the use of linear Western time and the indigenous concept of *Pachamama*. The second part of the analysis is through the intersectional theory, which shows how space and time manifest in different ways depending on race, class, gender and ability. The thesis finds the actors strategically mobilize the concepts of time and space, within decoloniality and intersectionality, which influence the visibility of slow violence. A disconnection between time and space conceals slow violence, which ultimately limits environmental justice. However, an interconnectedness of time and space reveals slow violence, and supports the affected community's claims to justice.

Key words: toxic waste, decolonial environmental justice, slow violence, intersectionality, Chile, Sweden

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1   Introduction

In northern Chile lies a small city called Arica, which in the mid 1980's became a target of Swedish toxic waste exports. After three shipments, the accumulated waste measured up to 20,000 tons, containing a mix of toxic heavy metals including lead, arsenic and mercury. The waste belonged to a Swedish mining company called Boliden Mineral AB (Boliden) and it was placed in an unprotected pile, 250 meters from a low-income social housing. The Chilean inhabitants then used the waste pile to improve houses and stabilize patios, as well as for a playground for children. Subsequentially, it is estimated that 12,000 inhabitants have suffered severe health complications, including deaths, from living in close vicinity to the waste.

What followed would be a four decades long struggle for environmental justice, which spanned over local, national and international scales. To this day, the struggle is unresolved, despite transnational litigation efforts and local municipal incentives to remedy and rehousing. In 2021, the UN Special Rapporteurs on Human Rights expressed their concerns for this ongoing violation of human rights in Arica in three letters; to Boliden, Sweden and Chile (OHCHR, 2021a, 2021b, 2021c).

In this qualitative case study, I argue that the difficulty for the people of Arica in reaching environmental justice can be attributed to the slow violence, in this case, of toxic waste dumping from Boliden. This is a case with different scales of temporal and spatial dimensions, stretching across not only decades and generations but also across the globe. As a result, this thesis focuses on themes of time and space, viewed from an intersectional and a decolonial environmental justice approach. The thematic analysis will illustrate how the complexity of the spatio-temporal dimensions of this case opens up a space for contestation. From an intersectional and decolonial perspective, I thus show how the different actors make use of this discursive space to mobilize their arguments in the battle for justice.

1.1   Thesis outline

The outline of this thesis is the following: the first section introduces the concepts, research problem and the thesis research question. Section two includes background, with case description, demography and the judiciary process. The third section includes a literature review, which accounts for the prevalence of time and space in the scholarship on slow violence and environmental justice. Section 4 introduces the theoretical framework and the specific approaches which are used in the analysis. Section 5 details the methodology and design, including data collection, scope and researcher's positionality. The analysis is placed in section 6, followed by a conclusion in section 7. The latter also includes some reflections on future research. Lastly, references belong under section 8 and appendix in section 9, where the table for data collection is attached.

1.2 Definition of concepts

This section provides the definitions for two concepts that are recurrent in the thesis: slow violence and environmental justice (EJ). The following paragraphs serve the purpose of clarifying the definitions and give a brief overview of where the two originated. Further detailing of the scholarship within slow violence and EJ and their specific relationship to time and space can be found in the literature review in section 3. Both slow violence and EJ have a twofold meaning, as both can be used as theories as well as concepts derived *from* theory. For the sake of this thesis, they are used as concepts.

1.2.1 Slow violence

The concept of slow violence was coined by Rob Nixon (2011) in his book of the same name. Nixon defines slow violence as "(…) a violence that occurs gradually and out of sight, a violence of delayed destruction that is dispersed across time and space, an attritional violence that is typically not viewed as violence at all" (2011, p. 2). Slow violence is a multi-faceted concept which can be applied to many different settings. It can manifest rhetorically in the representation of the "pervasive but elusive violence of delayed effects" of toxic pollution (Nixon 2011, p. 3). Furthermore, space within slow violence can also be caused by non-geographical actors, for example the absence of state-support, and failure of institutional resources. The original concept centers around the environmentalism of the poor, and how media-bias and global structures can create "disposable people" and ecologic disaster (Nixon, 2011, p. 4).

For the purpose of this thesis, slow violence is conceptualized according to the original definition mentioned above, with additional special regards to the slow workings of procedural justice. In this case, slow violence is exemplified through the prolonged suffering of the affected communities, whom are kept waiting in limbo; risking both mental and physical well-being.

1.2.2   Environmental justice

The theory of environmental justice can encompass multitudes of definitions of justice. In the global North, EJ can be traced to the social movements of the 1970's and 1980's, which responded to the injustice in the US of toxic waste dumping on marginalized communities (Agyeman et al., 2016, p. 324). At the same time in Latin America, EJ was inspired by indigenous mobilization and the holistic worldview of the human and non-human environment as dependent on one another (Schlosberg and Collins, 2014, p. 361).

There is an inherent complexity in defining environmental justice, as the theory is applied differently by each scholar (Schlosberg and Collins, 2014; Ajibo, 2016, p. 269). However, central to all definitions is the right for all people to enjoy a healthy environment and that environmental burdens shall be distributed evenly across the society (Ajibo, 2016, p. 269).

As a two-fold concept, EJ requires both a definition of 'environment' and 'justice'. For the purpose of this thesis, environment is defined as where people 'live, work and play' following the conceptualization by Novotny (2000). Justice is defined as participation in decision-making, compensation for environmental harms, access to - and fair treatment in - procedural justice, as well as the right to self-determination for individuals and communities, basic needs such as health care and the right to live in a safe and healthy environment (Schlosberg and Collins, 2014, p. 361).

1.2.3   General vocabulary concerning toxic waste transfers

Toxicity refers to any type of substance that can be harmful to humans and environment. Waste equals any type of biproduct of mining activities or other undesired substances facing disposal in one way or another. In this thesis, *toxic* waste is used interchangeably with *hazardous* waste, and so are the words *movement, transfer* and *export*. The word *transnational* refers to operations across borders, such as the activities of a *corporation*, while *international* refers to collaboration,

agreements or other activities between two or more *nations*. *Global,* on the other hand, refers to the highest scale in discussions on spatiality. Furthermore, I use Global North and Global South interchangeably with developed and developing countries, at times I also refer to them as rich and poor countries as a way to highlight differences in GDP.

1.3 Research problem

The research problem of this thesis is situated in the intersection between slow violence and environmental justice and problematizes time and space in transnational toxic waste cases. The Arica case is complex and tragic, with the involved actors spanning from different spatial and institutional levels, such as the UN, NGO's, the nation-states of Chile and Sweden, private corporations, Swedish jurisdiction, the local authorities of Arica and its affected inhabitants. Furthermore, the case involves transnational toxic waste dumping during a unique temporal and legal gray zone in which Swedish national environmental regulations were tightened but the international conventions had not yet been entirely drafted. The exports to Arica were executed in 1984 and 1985, only a few years before the 1989 Basel Convention[1]. Furthermore, the case has been rendered of normative importance by the ECCJ[2] report, as it exposes temporality issues within the institutional and legal frameworks that exist today (Esteban and Patz, 2021, p. 12). The research problem lies in the fact that different actors resort to different conceptions of time and space, to suit their various arguments, and strengthen their position in the case.

The very nature of toxic waste presents a slow violence representational challenge, since it intersects the spatial and temporal, with toxic waste exposure only revealing itself over decades. This time-space correlation becomes especially complicated when extended to different scales, from the local to global, unfolding

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[1] 1989 Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal.
[2] ECCJ is an abbreviation of European Coalition for Corporate Justice

from the past and into the future through the next generation. Furthermore, the research problem also lies in the conceptualization of time and space between a linear Western tradition and a circular non-Western tradition present in Arica, the indigenous concept of *pachamama*. The affected community live under intersecting oppressive structures of gender, class, race and ability, which calls for an intersectional lens on space and time.

1.3.1 Aim and research question

The aim of this thesis is to explore how the struggle for environmental justice is shaped by themes of time and space through intersectionality and decoloniality, particularly in the context of global North to global South toxic waste exports.

The analytical aim is to analyze how spatio-temporal themes are mobilized by different actors in order to build their arguments. Depending on how the type of time-space relationship is presented, the arguments can reveal or conceal the use of slow violence, which in turn shapes the outcome of environmental justice. A more interconnected use of time and space exposes slow violence and will strengthen the claims of the victims, supporting the long-term causality that can lead to environmental justice. A less interconnected use of time and space blurs the correlation between toxic exposure and human harm, thus obscuring slow violence and maintaining environmental justice further from reach. The intersectional and decolonial theoretical frameworks analyze understandings of time and space amongst intersectional groups and between the Western and the non-Western worldviews.

My research question is:

> *How has the slow violence of toxic waste dumping in Arica, Chile, affected the realization of environmental justice?*

2 Background

2.1 Case overview

The Swedish mining company Boliden Mineral AB (Boliden) exported 20,000 tons of toxic waste to Arica in the years of 1984 and 1985. The company had made a deal with a Chilean subcontractor, Promel Ltd. (Promel) who claimed they could process the waste for financial compensation. The export was approved by both Swedish and Chilean authorities, and since it was before the 1989 Basel Convention, the authorities did not thoroughly control the content of the waste or the processing capabilities of Promel (OHCHR, 2021a, p. 2).

The waste was a biproduct generated from mining activities in Sweden, and it contained high (even weapon-grade) concentrations of arsenic, mercury, cadmium and lead. It was dumped in a pile, uncovered and subject to wind and rain, at Promel's processing site, Sitio F. The pile lay a mere 250 meters from an area with low-income housing, remaining so for 14 years (OHCHR, 2021a, p. 3). Slowly, throughout the 1990's, the community started noticing negative health effects, which led to a local lawsuit against the Chilean health authority for having acted negligently in approving the waste site without communicating the toxicity to the local population (Castillo-Gallardo, 2016, p. 9). As a consequence, the authorities moved the waste to another site called Quebrada Encantada, with a promise that it would only lay there temporarily. However, the waste remains there to this day, 650 meters from low-income housing in the sector Cerro Chuño (OHCHR, 2021a, p. 3).

Over the years, not knowing the waste was toxic, the local community used the mud-like material to stabilize patios, build walls and for the children the dump served as a playground (OHCHR, 2021a, p. 3). The community suffered numerous health problems and diseases, including cancers, pains in joints and bones, difficulty breathing, miscarriages and severe birth defects. It is estimated that a total of 12,000 people has been affected, many of whom also lost their lives following their conditions (OHCHR, 2021a, p. 4). In 2021, the UN, in letters to the Swedish

government, Chilean government and Boliden, demanded action from each party. Sweden was asked to take back the waste, while Chile was asked solve sanitation issues and provide adequate health service locally, and Boliden asked to compensate the community economically for the harm they have suffered (OHCHR, 2021a; 2021b; 2021c).

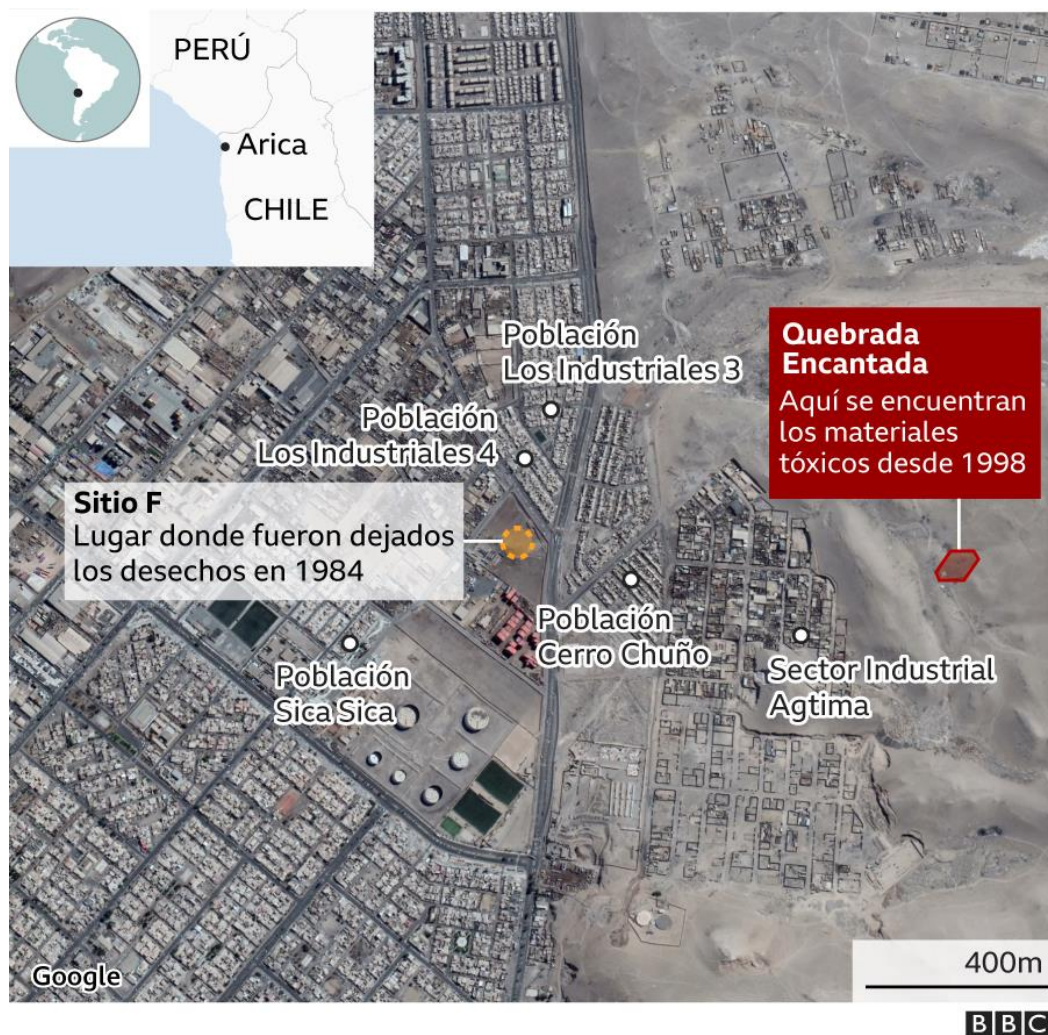## Zona afectada por la contaminación por metales pesados en Arica

Figure **1**: Zone affected by heavy metal contamination in Arica. Sitio F is the original site, Quebrada Encantada is the contemporary site (BBC, 2021)

2.2   The demography of Cerro Chuño

The city of Arica is the capital of the region of Arica and Parinacota in the most Northern part of Chile (Hidalgo Dattwyler, Vergara Constela and González Rodríguez, 2021, p. 8). From a migration perspective, it acts as a transit city for both national and transnational migration movements in search of the "Chilean dream" (Hidalgo Dattwyler, Vergara Constela and González Rodríguez, 2021, p.2).

Cerro Chuño is the closest settlements to the Sitio F, today considered by the rest of the Arican inhabitants as a contaminated no-man's land (Hidalgo Dattwyler, Vergara Constela and González Rodríguez, 2021, p. 14).

The settlement is a place of dual character, it is mobile due to the passing through of migrants which constitute 50% of the community, and yet there is still the long-standing presence of families waiting to be rehoused or to be compensated by the authorities following the toxic waste consequences (Hidalgo Dattwyler, Vergara Constela and González Rodríguez, 2021, p. 16). The people who still live there today, due to a lack of resources and socio-economic vulnerability, are children, elderly, disabled people, asylum-seekers, migrants and indigenous persons (OHCHR, 2021a, p. 4).

The indigenous presence mainly represents the Aymara people, but also some Mapuche and Quechua persons (OHCHR, 2021c, p. 3-4). The Aymara indigenous group is in Arica partially since it belongs to their ancestral territory where traditional movement circles through the city (Hidalgo Dattwyler, Vergara Constela and González Rodríguez, 2021, p. 9). However, their presence is also part of a process characterized by the search for "modernity", where the young population look for new ways of making fortune in the urban life (Hidalgo Dattwyler, Vergara Constela and González Rodríguez, 2021, p. 9).

2.3 *Arica Victims KB v Boliden Mineral AB*

Together with three Swedish lawyers and local leaders, the community eventually formed an organization called Arica Victims KB so that they could proceed with suing Boliden in Swedish Court in 2013 (OHCHR 2021a, p. 5).

In 2018, the Skellefteå court decision freed Boliden from responsibility, arguing that the claimants did not prove sufficient causality between the waste and their arsenic levels. The court applied Chilean law, and the Chilean jurisdiction had determined that any level above 19 µg/L is considered harmful. The population sample all had tested for over 30 µg/L arsenic, but the Court decided to go by Boliden's proposition for the level of arsenic constituting harm, 100 µg/L urine. Thus, the court concluded that there was no evidence of harm and Boliden had won (Marx et al., 2019, p. 49-50).

The second instance, Court of Appeal for Upper Norrland, also concluded the case in favor of Boliden in 2019 but chose to apply Swedish law. By doing this, the case was denied because it became time-barred, as Sweden counts the statute of limitation from "the time of the negligent act that gave rise to the alleged harm; and that the relevant "act" was the decision of Boliden Mineral AB to export the waste" which would put the limit around year 1999 (OHCHR 2021a, p. 5). In that way, some of the victims' claims were time-barred before they were born, as it can take 25 years for toxic health impacts to manifest (OHCHR, 2021a, p. 6).

3   Literature Review

In this section, I briefly review the existing theoretical literature and show how spatial or temporal analysis has been used firstly in environmental justice, and secondly in slow violence scholarship. Moreover, I identify the gaps concerning time and space in current literature, and consequently, in section 4, I suggest how to complement the literature.

3.1   Time and space in the EJ scholarship

The EJ scholarship follows a long tradition of spatial analysis, starting with the very first study on toxic waste in minority communities in the United States (United Church of Christ Commission for Racial Justice, 1987). The spatial methodology became a central influence in the EJ work, with more advanced methods such as geographic information systems (GIS) and other types of spatial mapping which could give a richer racial and socioeconomic analysis (Agyeman et al., 2016, p. 327). While the discipline spread and grew, it incorporated more issues beyond disproportionate national toxic waste dumping, covering environmental justice issue also on the global scale, such as climate change, migration, free trade agreements and human rights (Agyeman et al., 2016, 328). The temporality in EJ scholarship is however rather scarce. The EJ scholars Pulido and de Lara (2018) introduces temporality in the form of spatio-temporal mapping, and in the adjacent field of climate justice there is Bopp and Bercht (2021) who argue strongly for an integrated spatio-temporal analysis.

The geographer David Harvey (1996) has a strong influence in the EJ scholarship. His argument is that justice and geography are co-constructed and depending on the construction of justice, certain understandings of space will follow. This type of relationship can play out in a strategic way so that "different

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groups will resort to different conceptions of justice to bolster their position" (Harvey, 1996, p. 398). In this way, Harvey's argument asserts agency to different groups involved in EJ matters.

Another influential scholar is Walker (2009) who argues for a widened spatiality and more pluralistic understanding of justice is Walker (2009). Joining Harvey (1996) in the field of geography, Walker (2009) problematizes spatiality in three ways: by proximity, vulnerability and well-being, and as intertwined with distribution. Building on Harvey's (1996) argument of the co-constitution between justice and space, Walker argues that as EJ moves to more pluralistic understandings of justice, a multi-scaled spatial analysis must follow so that the discipline can become more methodologically diverse (Walker, 2009, p. 631). This in turn translates to greater applicability to diverse social contexts around the world.

The study of Pulido and De Lara (2018) presents a rethinking of environmental justice with a new focus on temporality. The aim of their spatio-temporal mapping is to create a historical lens of that ties the environmental justice movement of racially mixed groups in the Americas to its historical epistemic roots of Black Radical Tradition. By adding the temporality to an otherwise spatio-dominated EJ framework, the study opens up new political possibilities for EJ (Pulido and de Lara, 2018, p. 79).

Bopp and Bercht (2021) finds that the link between time and space is crucial for understanding how the unequal distribution of climate change and vulnerability affects farming communities in South India and Norway (Bopp and Bercht, 2021, p. 42). Much like slow violence (Nixon 2011), the authors ask if time can render injustices visible that otherwise would remain hidden and unresolved (Bopp and Bercht, 2021, p. 30). The study defines and utilizes three types of times partially tied to spatiality; parallel times which includes world-time (the pace by which political stakeholders take action, as well as globalization and market trends), micro-time (pace and rhythm of local individual practices, routines and rituals), and natural time (seasonal patterns, weather and availability of natural resources). Bopp and Bercht (2021) find that the influence of time on settings shape the communities' responses and adaptation to climate change.

3.2   Time and space in slow violence

Slow violence explores the effects of environmental injustice and other harms over time. The literature on slow violence covers many disciplines, therefore it will be narrowed down to specifically how slow violence has been used in cases of toxic waste contamination of land and people, as well as contributions relating specifically to the conceptualization of slow violence.

The critical scholarship on slow violence mainly resides within political geography and includes four prominent scholars: Pain and Cahill (2019, 2022) and Christian and Dowler (2019). Writing together for a special issue on slow violence in the ACME journal (2019) the scholars argue that Nixon's (2011) concept is too focused on temporality and lacks spatiality, specifically the kind that can be found within the critical feminist tradition (Cahill and Pain, 2019) and critical race theory (Christian and Dowler, 2019). Three years later, Cahill and Pain (2022) revisit the subject, addressing the issue of scale in spatial analysis.

Another prominent scholar, also within geography, is Davies (2018, 2019) who presents two ethnographic studies on slow violence in Louisiana, a region nicknamed "Cancer-Alley" where communities have lived with toxic pollution for generations. The studies explore how time interacts with the experience of living within toxic spaces (Davies, 2018, 2019). Davies (2018) explores unjust exposure to toxic waste and potential means of resistance and introduces the idea of "slow observation". The author discusses time as a source of ambiguity in measuring toxic waste and how spatio-temporal analysis is crucial to measuring the harm, as "toxic materials are able to defer their harmful consequences across time and space, putting distance and uncertainty between a toxic hazard and the people it affects" (Davies, 2018, p. 1538). In Davies (2019), the author poses the important question "out of sight – to whom?" which problematizes Nixon's (2011, p. 2) definition of slow violence as "out of sight". This question changes the viewpoint to the affected community and signals the importance of taking their knowledge claims seriously (Davies, 2019, p. 6).

Sandlos and Keeling (2016) present a study of slow violence in the case of a now-abandoned mine which was placed on indigenous land in Yellowknife, Canada. The mine was active for 50 years and polluted nearby waters and land with

arsenic, poisoning both territory and members of the Yellowknife Dene First Nation people (Sandlos and Keeling, 2016, p. 7). The study utilizes slow violence to describe the arsenic poisoning as more than simply a technical problem, but as an agent of the colonial history of dispossession. Furthermore, slow violence highlights the worries of the Dene people; how to communicate the toxicity of their land to future generations in thousands of years (Sandlos and Keeling, 2016, p. 17). The study highlights the importance of broadening the concept of environmental justice beyond spatiality, in order to grasp the past, contemporary and future effects of toxicity (Sandlos and Keeling, 2016, p. 18).

3.3   Research gap

What is missing in the literature of slow violence and environmental justice is a fully integrated analysis of time and space, where multiple scales and types of time and space are put into a relationship, with specific regards to intersectional and decolonial perspectives. I argue that this kind of combined analysis is especially useful when researching an international environmental justice case that has unfolded over multiple decades, like the case of this thesis. Furthermore, I have not been able to find any research that applies slow violence to EJ cases of transnational litigation processes between a country in the global South versus the global North. This type of environmental law issues is an area that may traditionally belong to the legal scholars. However, with an imminent climate catastrophe, climate-change related cases have more than doubled since 2015, thus becoming ever-more relevant for development scholars to engage with (Setzer and Higham, 2021, p. 4).

Specifically, slow violence is missing an intersectional perspective that fully integrates time and space (Cahill and Pain, 2019b; Christian and Dowler, 2019b; Pain and Cahill, 2022). Furthermore, the EJ scholarship is dominantly based in the global North and thus utilize temporality in a typically linear, Western way (Álvarez and Coolsaet, 2020, p. 56). When researching cases that are in the global South, EJ scholars and activists from Latin America have argued that there needs to be an acknowledgement to other conceptualizations of time, stemming from the

worldview of indigenous people (Álvarez and Coolsaet, 2020; Rodriguez, 2020). Since the region of Arica is situated on indigenous ancestral land and have a strong presence of Aymara people, as well as some influence of Quechua and Mapuche people (Hidalgo Dattwyler, Vergara Constela and González Rodríguez, 2021, p. 17; OHCHR 2021b, p. 4), I suggest it is necessary for the EJ analysis in this thesis to have a specific decolonial approach.

My contribution to the literature will therefore be to apply an intersectional and decolonial approach to time and space which enriches the analysis of how slow violence shapes environmental justice. Furthermore, the analysis stresses the importance of acknowledging temporality as equally constitutive as spatiality in shaping environmental justice. The Arica case will serve as an example of how the ambiguity of the spatio-temporal concepts creates an arena for open contestation, where actors strive to control the time-space narrative, which in turn affects the outcome of environmental justice. In a similar way that Harvey (1996, p. 398) argues that "different groups will resort to different conceptions of justice to bolster their position", I argue that different groups resort to different conceptions of time and space to bolster their arguments. Furthermore, I build on Davies (2019) question "out of sight – to whom?" to explore how slow violence and injustice is seen and un-seen by different actors, depending on their position within the case as well as on their concept of time and space.

4   Theoretical framework

In this section, I will display how my theoretical approach can contribute to fill the previously mentioned gaps of spatio-temporal analysis in the literature on slow violence and EJ. In order to do that, I am applying an intersectional and a decolonial approach, the latter inspired by specifically Latin American decolonial theories (Álvarez and Coolsaet, 2020; Rodriguez, 2020). The motivation for these two perspectives is to add two approaches to the literature on slow violence and EJ, which have been highlighted by scholars as missing (Cahill and Pain, 2019a; Christian and Dowler, 2019a; Pain and Cahill, 2022; Álvarez and Coolsaet, 2020; Rodriguez, 2020). Furthermore, the two approaches fit well with the type of case that Arica represents, and provides the thesis with a useful analytical tool to answer how slow violence shapes environmental justice. I describe the two approaches and elaborate my arguments further under each of the following sub-sections.

4.1 Intersectional approach to time and space

The intersectional approach in this thesis adds to the literature in the sense that it provides a more detailed understanding of how slow violence can manifest in different ways depending on the intersecting structures that define the living conditions of the affected. An intersectional analysis also has implications for the final outcome of environmental justice, as justice can mean different things depending on the situation of a specific group.

Intersectionality is largely based in the feminist scholarship, specifically originating from the work of Black feminist and women of color activists and scholars (Moradi and Grzanka, 2017, p. 501). The academic term was introduced by the legal scholar Kimberlé W. Crenshaw in 1989 (Labelle, 2020). The intersectional perspective sees marginalization as shaped by a system of intersecting structures that contributes to processes of oppression and exclusion (Labelle, 2020, p. 410). The intersectional perspective sees marginalization as shaped by a system of intersecting structures that contributes to processes of oppression and exclusion (Labelle, 2020, p. 410). The fundamental key to intersectional analysis is to avoid single-structure explanations to inequality (Moradi and Grzanka, 2017, p. 504).

Intersectionality can be applied in three different ways according to McCall (2005). In this thesis, the mode of application will follow McCall's second variation called *intracategorial* analysis (McCall, 2005, p. 1774). The intracategorical approach "(…) begins with a unified intersectional core—a single social group, event, or concept—and works its way outward to analytically unravel one by one the influences of gender, race, class, and so on (…)" (McCall, 2005, p. 1787). In other words, intracategorical analysis means researching the differences and diversities *within* a group, which is especially suitable for single case studies with the purpose of making "thick descriptions" (McCall, 2005, p. 1782).

One can argue that the conditions for the individual person's life are highly tailored by individual factors and cannot be fully generalized according to societal structures. Even so, from my position as a social science researcher, it is important

to include societal structures to make a richer and more holistic analysis when researching real-world-problems and people's lives. Furthermore, intersectionality provides tools for reflection on researcher positionality. Therefore, I include intersectionality as one out of two important approaches to the spatio-temporal analysis for Arica.
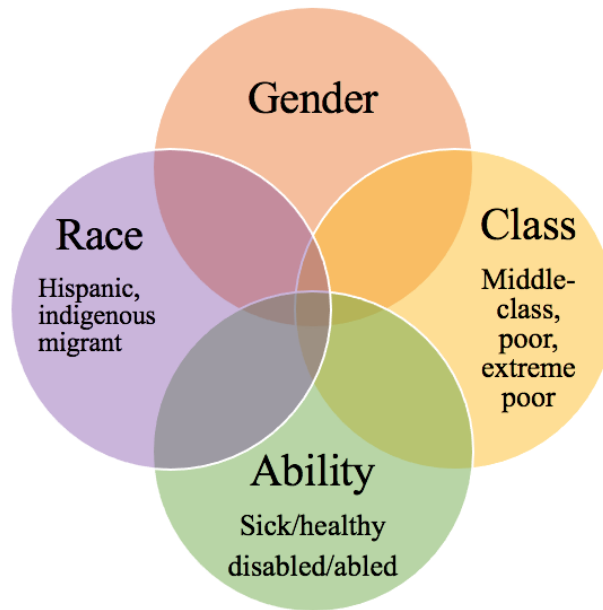

Figure 3. Intersectional themes in Arica (The author, 2022)

4.2   Decolonial approach to time and space

Scholars in from Latin American decolonial thought put an emphasis on *coloniality* when analyzing environmental justice issues (Rodriguez, 2020, p. 80). Coloniality broadly refers to the persistence of colonial values, which the decolonial approach sees as a "cause to current injustices and violence" on the continent (ibid.). For a decolonial EJ analysis, coloniality can manifest in three ways: power, knowledge and being. This thesis will focus on coloniality of knowledge, since the unit of analysis are perceptions of time and space.

Coloniality of knowledge refers to the difference made between European and non-European symbolism and systems of knowledge-making (Álvarez and Coolsaet, 2020, p. 53). Within philosophical and scientific discourses, there is an epistemological dominance of European knowledge systems which claim neutrality and objectivity, a sort of "epistemology of point zero" (Castro-Gómez, 2005 in Álvarez and Coolsaet, 2020, p. 53). The Latin American decolonial thought acknowledges this dominance and turns to validate "traditional" systems of knowledge which otherwise are viewed as having only limited theoretical and analytical value (Álvarez and Coolsaet, 2020, p. 53). By embracing the variety of knowledge configurations, the Western EJ scholar can avoid coloniality of knowledge in applying EJ theory (Álvarez and Coolsaet, 2020, p. 63). Thus, the decolonial analysis of this thesis has a two-fold purpose: to avoid epistemic dominance in the research process, and to expose coloniality of knowledge through analysis of time-space usage among Western and non-Western actors.

The majority of the indigenous population in Arica are the Aymara people, but there is also a presence of Quechua and Mapuche people ((Hidalgo Dattwyler, Vergara Constela and González Rodríguez, 2021, p. 8). In the Aymara cosmovision, nature and humans as part of one, interrelated time-space concept called the Pachamama, also known as Mother Earth. The *pacha* refers to the space/time, in which there are three dimensions: the *alax pacha* (world above), *akha pacha* (world here) and *manqha pacha* (world below). It is in the second dimension, the *akha* where Pachamama is found (Huanca, 2019, p. 10). The word *pacha* is a dual world "representing two related conditions: the static (space) and the dynamic space (time)" (Huanca, 2019, p. 11). The time and space of *pacha* is completely

indistinguishable from one another. Thus, Aymara spatio-temporality is perceived in a circular, repetitive pattern which differs from the Western linear time of past, present and future (Huanca, 2019, p. 12). For an illustration, see figure **X** below.

For the analytical purpose of this thesis, *pacha* is interpreted as representative of the fluidity of time, while past, present and future represents a frozen type of time, relating to the Western linear temporality. Thereby, the decolonial lack of EJ analysis is compensated by embracing non-Western concepts of time as having an equal analytical value. By identifying these two knowledge traditions in the empirical material, one can analyze the how *coloniality* determines which actor utilizes which type of time. The decolonial analysis will thus serve to display how the difference in actors' usage of time and space shows the way slow violence is portrayed, and consequently how the slow violence shapes environmental justice in Arica.

Figure 4. Visualization of circular time *(pacha)* and linear time *(Western)* (Taipe, 2004, p. 6)

5 Methodology

This section details the research design, methods and data collection of this thesis, by which I analyze the slow violence in the case of Arica. Furthermore, I discuss the scope and limitations, and a reflection of my own positionality.

5.1 Research design

This thesis is a desk-based qualitative single case study. The case study provides the possibility to investigate the phenomenon or situation in its context and reach a deep and holistic understanding (Robson and McCartan, 2016, p. 150). It is of flexible design, as I started broadly by engaging with the material, letting the data lead to my choice of methods and influencing theoretical and strategic choices (Robson and McCartan, 2016, p. 146-147).

5.2 Research method

The choice of research methods for this thesis is thematic analysis, which allows for a flexibility in both theory, epistemology and coding approach (Braun and Clarke, 2006). I do both deductive coding, looking for pre-existing themes based on the theory in a top-down manner; and inductive coding, a bottom-up engagement with the data set, which inspire ideas of sub-codes and more detailed themes depending on what is found (Braun and Clarke, 2006, p. 83).

The thematic search is guided by the explicit research question as well as predetermined theoretical interest of slow violence. Furthermore, a semantic

approach is chosen, meaning I begin with description and organizing of the data, and follow with interpretation and analysis, theorizing the significance of patterns and look for broader meanings and implications of the texts (Braun and Clarke, 2006, p. 84).

5.3   Epistemology

The analysis is based on both a realist and a contextualist epistemology, due to my position as a researcher. If the actor is communicating time and space in a Western, linear way, I assume the meaning-making is straight-forward and that it unidirectionally reflects the meaning and experiences of the actor (Braun and Clarke, 2006, p. 85). However, if the actor is communicating time and space from a non-Western perspective, I resort to a contextualist epistemology based in the critical realism of decolonial theory, which emphasizes that knowledge-creation differs between societal contexts and that the Western scientist cannot claim absolute truth or neutrality (Álvarez and Coolsaet, 2020, p. 63).

5.4   Data collection

The actors are sorted into three groups. Group A will represent the affected community in Arica and the voices who amplify them. Data includes community testimonies from video sources and the UN letters sent by the Special Rapporteurs on human rights. Group B represents Boliden and their advocates. Data from group B includes the Boliden's includes press releases, website information and the company's response in the UN correspondence. Group C represents the in-between, or the institutional group. These include different voices from within the Swedish government, with data in the form of the government response in the UN correspondence, as well as a parliamentary debate. Another actor in group C is the interstate position of the EU and their take on the Swedish court decision published in a report. For a more detailed list of data collection, see appendix.

5.5   Scope and limitations

Two of the main limitations for this thesis are lack of space and time to cover and code the rich documents of the empirical material. Therefore, I have had to exclude some content which would have been interesting to include for a deeper study – for example the methods used by Boliden to intimidate the lawyers representing Arica, a so-called strategic lawsuit against public participation (SLAPP), the first ever observed case in Sweden (OHCHR, 2021b, p. 2).

Another major limitation was the language restraints. I had the access to fluent Spanish-speaking family members with whom I verified the accuracy of Spanish-English translations originally made by the automatic online DeepL software[3]. In the end, I chose to exclude some of the major Chilean government sources as I doubted the analytical accuracy in translations of highly complex and detailed texts. This issue could have been solved if there had been more time.

Reflecting the validity of the visual sources produced by filmmakers and the local community, I acknowledge it is a production rooted in context. However, I am only interested in the voices that appear in the films, and not analyzing details production and distribution of visual sources. The documentary *Arica* (2021) inspired UN to take action, therefore I deem them important and sufficiently reliable as empirical material for the purpose of this thesis.

5.6   Ethical considerations and positionality

I worked with the documentary *Arica* (2021) as a transcriber, mainly for interviews and talks between the lawyers preparing for the trial. It inspired me to do my thesis on the case, and I had some previous knowledge from this work. However, my goal is to present all sides equally despite my (minor) position on the film team.

Furthermore, as a student at a Swedish university far from Chile, I cannot speak for the community in Arica but only provide an interpretation of their statements and an analysis of how their lives are represented in the data. As I did not have any

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[3] https://www.deepl.com/translator

opportunity to conduct my own interviews, I have no choice but to rely on the material gathered by others, i.e. the filmmakers and the videos uploaded by the community. Therefore, I acknowledge that my account does not allow for a participatory understanding of the community's lived experiences, but only of the way they are represented in the secondary data.

The material I have chosen to include in my data sample are all publicly available. For this reason, names have not been anonymized.

6 Analysis

6.1   Coding for time-space relationships

The coding of the empirical material reveals different types of spatio-temporal relationships. The spatial themes are divided by scale, the local, national and the global, while the temporal themes are divided in past, present and future. This makes for in total nine different combinations, of local, national and global: past, present and future. See Table 1 for visualization.

Some codes for space which can appear on different scales include distance, location, movement and environment. Distance, or its antonym proximity, can refer to the measured distance between two points, or a global distance between countries. Location can refer to a country, a site, a housing complex, or in the physiological form of a body itself. Movement can refer to the global scale such as exports and visits between countries, or on a local scale as in transportation to a hospital. Environment includes the non-human nature, surroundings and weatherly functions, such as wind or rains. Spatial units can either be referred to as separate or as a whole, like *Pachamama.*

Time includes codes such as years, days, repetitive time such as "every day" or "monthly", generations and future-oriented expressions. Time can be referred to in two ways, frozen (Western linear time) or fluid (*pacha*, non-Western time). Frozen means that one point in time is isolated and thus separated from its long-term context, divided into past, present and future. Fluid time equals long-term perspectives, circular consequential thinking, a coexistence of the past, present and future.

The analysis is structured by two main sections: the intersectional approach and decolonial approach. The actor groups are sorted into sub-sections under each section and analyzed from both perspectives. Each section will answer the research question:

How has the slow violence of toxic waste dumping in Arica, Chile, shaped the realization of environmental justice?

The discussion follows the actors' use of time-space relationships and how the frequency of different kinds of relationships reveal or conceal slow violence, from an intersectional perspective and from a decolonial perspective. The second part of the discussion relate to how the difference in visibility of slow violence shapes the outcome of environmental justice.

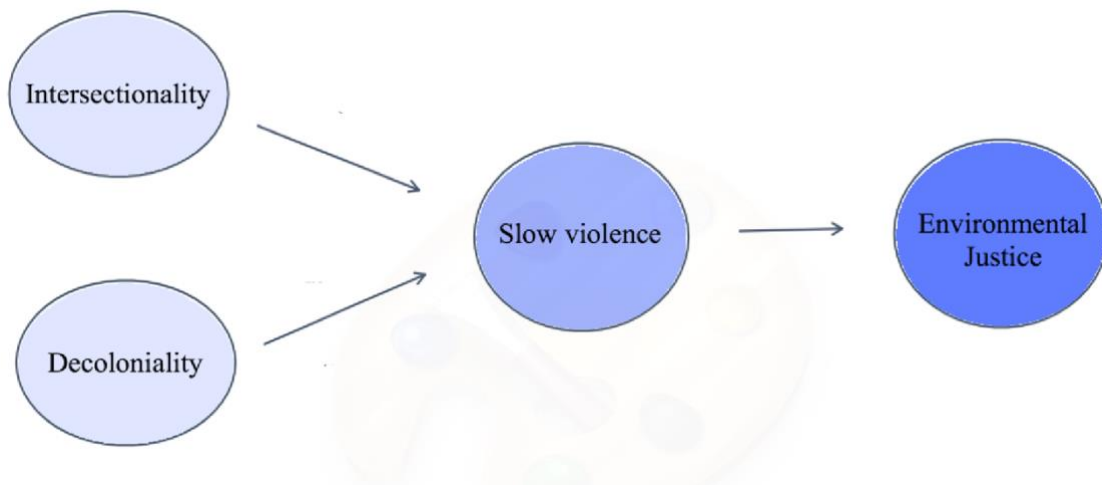For an illustration of the argument, see figure 5 below.

Figure 5. Illustration of argument (The author, 2022)

6.2 Decolonial analysis

When coding the actors' arguments into the different thematical combinations, the tendency is that different time-space relationships are more frequent than others. Following my adaptation of Harvey (1996) different groups resort to different conceptions of time and space to bolster their arguments. Group A are defending or advocating for the affected community, including voices from the community itself. Group B are defenders and representatives of the mining company Boliden, and group C refers to states and other authorities.

For an illustration of the prevalence of spatio-temporal relationship among the actor groups, see table 1 below. Note that group A, the community and their advocates, are present in all possible connections between time and space, which shows the holistic thinking of *pacha* transcending the linear time (and space) units. However, the arguments of group B reside in the past across all spatial levels, and in the present across two, while lacking any mention of the future. Group C is the most scattered, which could be explained by their ambiguous position as 'in-between' the main actors. This section explores all three groups and patterns, starting with group A.

Time	Space		
	Local	**National**	**Global**
Past	Group A Group B Group C	Group A Group B Group C	Group A Group B Group C
Present	Group A Group B	Group A Group B Group C	Group A Group C
Future	Group A	Group A	Group A Group C

Table 1. Time-space relationships among actor groups

6.2.1   Group A – *Pacha* and linear combination

The group that utilizes all nine combinations of time and space is group A, the Arica community, their advocators and supporters. These actors want to display the most holistic picture of damages and possible reparations that transcends time through all spatial scales. It becomes apparent when examining the statements from the community and their representatives, but also from the UN group of Special Rapporteurs who advocate for an end to the human rights violation in Arica. The actors in group A advocates for the sake of the community with two strategies, bottom-up demands from the Aricans and top-down demands from the UN, both angled to national and international authorities (group C) as well as directly to Boliden (group B).

What is interesting for group A is the mix between *pacha* concepts from the bottom-up organizing, belonging to the community, and the Western temporality coming from the UN in the top-down strategy. Despite epistemologically different, they communicate time and space similarly – in a holistic and interconnected way.

What follows is an excerpt from the UN's letter to the Swedish government:

"The fact that the hazardous waste generated in Sweden was dumped in Arica in the mid-1980s, does not in any way undermine the need for addressing the issue today, and as a pressing matter. The responsibility to prevent the ongoing exposure and fully repair the health and environmental harm inflicted on Arica residents will become more acute with the passage of time. This is because of the latency periods of the hazardous substances in the toxic waste, which manifest their full deleterious impact on human health after years of chronic exposure. The growth of the city of Arica, and the risks posed upon future generations only aggravates this responsibility." (OHCHR, 2021a, p. 8)

Even though the UN automatically resorts to *coloniality* in using the Western concepts of past, present and future, they do so in such a way to interconnect the three. The quote reflects with high precision the slow violence that is presented by exposure to toxic waste, its effects manifesting slowly and over time. Firstly, it makes it difficult to discover if a person's health is affected, a challenge that belongs to the spatio-temporal relationship of past, present and future on the local level. The

health damages of the toxic waste can be carried on to future generations, not only by the spatial growth of the city but also through generational heritage – birth defects such as neurological disorders (OHCHR, 2021a, p. 4).

Another space-time relationship is the global past, referred to in the beginning of the statement. The UN phrases it in a way that ties the past into the present, highlighting the importance of "addressing the issue today" despite the waste being dumped in the 1980's. Thirdly, the "responsibility to prevent" and "fully repair" belongs to the time-space relationship of the present and the future, transcending the spatial scale of local to global. The locality refers the population in Arica and the specific location of the toxic waste in the city, the national space belongs to the role of the Chilean government, and the global to a repatriation of the waste back to Sweden.

To represent the community, and the prevalence of *pacha* time, the following statement is from a community-made video where a woman dressed in the colorful Aymara flag walks over the desert to the current site of the toxic waste, Quebadra Encantada, where it was moved in 1998 as a temporary storage solution (Castillo-Gallardo, 2016, p. 9). The woman, who narrates the video, starts to decorate the walls surrounding the site with messages to Sweden, turning it into a symbolic "Swedish cemetery".

Figure 7. Narrator with Aymara flag wrapped around her head, working on the mural surrounding Quebadra Encantada – the "temporary" storage site from 1998 where the waste remains today (*The Swedish Cemetary,* 2021, 01:07)

The woman says:

"I will use my hands and my conscience to write about this human misery, of traffickers of death from the cold seas of Sweden who dumped their toxic waste on my land many years ago. That waste is still down there waiting for more innocent victims. That place is a true cemetery. The paradox of a Swedish cemetery in our desert." (*The Swedish Cemetery*, 2021, 01:07)

In this quote, a fluid type of integration between space and time can be observed, transcending both temporal and spatial scales which shows the presence of *pacha*. Firstly, she refers to the most local spatiality: the body "my hands", and the spirit "my conscience". Furthermore, she observes *coloniality* in the behavior of Boliden as "traffickers of death", referring spatially to the global movement of the waste and locally to her ancestral belonging to the land: "my land" and "our desert". Another interesting observation is that she allocates agency to the waste itself, as a being "waiting for more innocent victims". This matches the second dimension, *akha pacha,* which can be described as "world here - personified by the Earth or soil" (Huanca, 2019, p. 10). Furthermore, slow violence is exemplified as the waste is still perceived as active and will eventually expose more people to the toxins. The fluid *pacha* spatio-temporality is also evident in her metaphor of a cemetery that can come alive, which in Western linear time would be a place sealed in the past.

In summary, group A utilizes all space-time relationships. The UN expresses time following the linear Western concepts but do so in an interconnecting effort. The UN wants to prove causality between the past, present and potential future, connecting the spatial, the location of the toxic waste, its effects and the demands to transport it back to Sweden. The community expresses time and space following *pacha* conceptualization, a fundamental coexistence of all scales, pointing to coloniality in Boliden's behavior. Thus, Group A wants to push responsibility from two ends, the bottom-up demands presented by the community and the top-down demands presented by the UN. The slow violence of the toxic waste manifests on different temporal and spatial scales, through *pacha* and linear Western time.

Thus, to answer the research question, the actors in group A utilize these space-time relationships to prove harm, allocate responsibility, and demand action. The

relationships reveal and expose the slow violence, which is a step on the way to environmental justice as it proves causality. The malleability of space and time presents an opportunity to advocate for justice for group A, but it has an inherent double-edged quality as it can be used to do the opposite. This is illustrated in the following section on time-space relationships prevalent in the actors of group B.

6.2.2   Group B – *coloniality* in time-space relationships

The actors of group B represent the position of Boliden. The themes inherent in their statements have a dominant use of the past, less for the present and keep most of the future absent. The spatial scales are dominant on the local and national level. Central to Boliden's usage of time-space relationships is that they are all "frozen", which corresponds Western linear time. What makes their statements show *coloniality,* however, is that Boliden mobilize the Western linearity in a way that isolates the company's present from any relationship to the company's past. This is a strategic use of time and space through which Boliden can dismiss causality and deny responsibility.

The full Boliden stance on the case can be summarized by the following statement from their press release in response to the publication of the *Arica* (2021) documentary:

"The conclusions from the trial in Skellefteå District Court clearly show that Boliden has essentially acted responsibly, that relevant authorities in Sweden and Chile were informed and all regulations were followed. Furthermore, it was judged that the course of events in Chile, for which the Chilean authorities and company [Promel] were responsible, was impossible for Boliden to predict." (Boliden AB, 2021, p. 1)

The time-space relationships that can be observed in the statement above are all set in the past, with one exception: the conclusion from the Swedish court. Boliden's spatial use refer of the local and national scale, clearly separating Sweden and Chile, but exclusion the global connecting scale. When Boliden refers to "the course of events in Chile", meaning what happened in Arica, they mobilize the local and national scale which creates a spatial distance between Boliden and the Chilean

ground. At the same time, Boliden displays a temporal distance by stating that the outcome was "impossible for Boliden to predict" which further reflects the responsibility away from Boliden in the present, and towards the past on the spatial unit of Arica and Chile. The exclusion of the global scale diverts attention from the fact that it was an export, a spatial relocation, that caused the event in the first place.

In summary, the time-space relationships that are prioritized by Boliden are all in the past, and mostly on a local and national scale. The use of these relationships allocate responsibility to the states and the authorities in both countries, which diverts the attention from Boliden's initial decision to export the waste, shielding the *coloniality* inherent in that behavior. By excluding the present and future from being a relevant temporality, group B reflects any blame on the past and on the other actors. To isolate the spatio-temporal factors to dissect the long-term view also reflects the *coloniality* of how the Western linear time can be used. Furthermore, the *coloniality* is present in the objective and neutral way that Boliden refers all further questions to the court case decision, which displays "epistemology point zero" (Castro-Gómez, 2005 in Álvarez and Coolsaet, 2020, p. 53).

Group B's use of time-space relationships isolates each event to a certain point in time and space, which interrupts any long-term perspective, thus concealing slow violence. Furthermore, the spatial isolation of the local and national scale signals that the global distance from a Swedish company to Chile is so far that it becomes close to impossible to hold Boliden accountable.

In other words, group B mobilizes time and space in a way that does not reveal any relations between the past and the present, or the local with the global. This depiction conceals any negative consequences of Boliden's toxic waste exports, as the slow nature of violence is automatically disregarded. By employing *coloniality* of frozen time-space relationships, they put slow violence "out of sight". This conceals any causality, without which the endeavor of environmental justice is cut short, or even made impossible for the local community in Arica to achieve.

6.2.3   Group C – The Authorities

Group C represents the voices in between Boliden and the affected community. In this section, the space-time relationship is illustrated by the Swedish government's response to the UN Special Rapporteurs (Ministry for Foreign Affairs, 2021) and by the observations of the EU relating to the Swedish court decision (Marx *et al.*, 2019). As the actors in group C do not fully represent either camp, their usage of time-space relationships is ambivalent and they mostly refer to the past on all spatial scales, followed by the present on a national and global scale. However, as is presented in the following quote, the Swedish state denies responsibility to act on the basis of isolation of the past from the present, as well as spatially referring to Chile and Sweden as separate:

"(…) a considerable time has passed since the specific consignments of hydrometallurgical residues were made by a private (non-governmental) company, Boliden Mineral AB, to a Chilean company Procesadora de Metales Ltda (Promel) in 1984 and 1985. The Government notes that the relevant legal framework governing waste management, as well as the assessment of materials classified as hazardous waste, has developed during this time. At the time of the consignments, no export licence was required since material with a metallurgical content similar to the hydrometallurgical residues were not classified as hazardous waste." (Ministry for Foreign Affairs, 2021, p. 2)

The first time-space relationships in this argument is a past-global. The wording follows that of the Western linear time-view, as the government bases their argument on that "a considerable time has passed". In isolating the past from the long-term perspective, the government does not mention consequences for the present or future, following the *coloniality* of frozen linear Western time. In this way, slow violence is obscured, and responsibility denied. Thus, environmental justice cannot be reached as Sweden "respectfully disagrees with the assertion that Sweden is under any obligation to redress the situation" (Ministry for Foreign Affairs, 2021, p. 2). The spatial themes include the national institutional level, separating the private company from the state, even though the export was approved by the state's Environmental Protection Agency (OHCHR 2021a, p. 2). The legal

national framework relating to the export license mirrors the international 1984 OECD decision-recommendation, operating through global to national scale (Ministry for Foreign Affairs, 2021, p. 2). Furthermore, global spatiality is present through the movement between Sweden and Chile, highlighting that Promel was a Chilean company. This spatial separation furthers the *coloniality* of space – as independent and neutral. The fact that Chile was, at the time, a military dictatorship under the rule of Pinochet goes unmentioned (Delgado Varas and Bolund, 2021, p. 4). From a *coloniality* approach, this type of "neutrality" does not hold up when knowingly exporting waste from a democracy in the global North to a dictatorship in the global South.

Another actor in group C is the EU who published a report in 2019, where they react to the absurdity of the Swedish court's decision to free Boliden of responsibility:

"The Court rejected most of the claimants' arguments, but found it remarkable and negligent of Boliden to have continued the contractual relationship with Promel after realizing any exported waste would end up in an uncovered pile in close proximity to already populated areas, despite knowing such storage conditions would not be accepted at their plant in Sweden." (Marx et al., 2019, p. 49)

As an actor in group C, the role of the EU is not tied to responsibility in the case, therefore there is no need for the EU to either defend or place blame. In this way, they do not necessarily need to mobilize time-space relationships to strengthen their position and arguments. However, this quote points to a *coloniality* in the mindset and behavior of Boliden, and by extension, the Swedish authorities who approved the exports – that it would not have been acceptable storage-conditions in Sweden.

6.2.4   Summary of decolonial analysis

The decolonial analysis of the different group's usage of time-space relationships shows that there is a presence of *coloniality* in group B and group C, as they refer to time and space as objectively separate and impossible to transcend multiple scales of spatio-temporality, such as the local-national-global and past-present-future. This is evidence of how the Western linear temporality can work to oppress more holistic views, such as the *pacha* used by group A. Furthermore, the *coloniality* of linear time and limited space obscures slow violence, while *pacha* spatio-temporality does the opposite. As slow violence is more visible through non-Western holistic views on spatio-temporality, group A opens up for possibilities to reach environmental justice. However, when un-seen through the *coloniality* in the Western tradition, slow violence poses a severe obstacle to justice since it obscures causality.

6.3   Intersectional analysis

Among the actors in group A, intersectionality is a common thematic occurrence. Themes include gender, age, disabilities and class which are most prevalent, and the less prevalent theme of ethnic factors, coding for example for migrants and indigenous people (OHCHR, 2021a, p. 3-4). The time-space relationships work differently when viewed from an intersectional perspective. For a migrant, a time-space relationship example could be the waiting time for a visa in a new country. For gender, it could refer to women's care work, such as a sick husband dressed by his wife, or a mother caring for a daughter. Another example could be the health damage from toxic waste that uniquely affects the reproductive system, such as uterine cancer or miscarriages.

In Arica, the affected people live under conditions shaped by multiple structures which an intersectional analysis can illuminate, such as ethnicity/race, territorial belonging, class, gender and ability (Castillo-Gallardo, 2016, p. 2). Temporality from a gender perspective could for example be the reproductive cycle and how it is affected by toxic waste exposure. For the women in Arica, these include risks of miscarriage, maternal and infant death, ovarian and uterine cancer (OHCHR, 2021a, p. 4). Another temporality associated with gender is the care work dimension, as it is mothers and wives who are expected to become the main caretakers of sick and disabled children or husbands (Romero and Pérez, 2016, p. 173). This dimension also intersects with class and disability, as the affected families are all living in poverty, especially when paid benefits due to exposure only target a small selection who are "sick enough" (Castillo-Gallardo, 2016, p. 10). Other class-related temporalities with a spatial connection include waiting in line to be rehoused, as well as waiting for economic compensation that may or may not come as a result of court proceedings (Castillo-Gallardo, 2016, p. 19).

	Intersectional categories			
	Gender	**Class**	**Ability**	**Race**
Time	Group A Group C	Group A Group C	Group A Group B Group C	Group A
Space	Group A	Group A Group B Group C	Group A Group B Group C	Group A Group B Group C

Table 2. Intersectionality in time and space among actor groups

6.3.1 Intersectionality in group A

In the documentary *Arica* (2021) a local mother called Patricia is talking with the filmmaker and expresses her thoughts on the international lawsuit and their situation in the following way:

"Patricia: She is 25 years old and has been bedridden for over eight years. My little girl.

Filmmaker: Maybe this lawsuit can at least make it a little more...

Patricia: Well, I hope that justice can be achieved, so that we can have a little better quality of life. If I get compensation and if my daughter lives, I will buy a hospital bed. That would be good, of course, because then we would be able to manage our illnesses." (Edman and Johansson, 2021)

In this quote there are both temporal, spatial intersectional themes. The temporal themes are set in the past, present, and future and are utilized in a fluid way, apparent in the consequence thinking that Patricia employs. The past is evident and intersects with local space, she has been bedridden for over eight years, and in the present, she is 25 years old. The future holds uncertainty, will her daughter live, will there be justice, will they get compensation? The future too is spatialized, will

Patricia be able to buy a hospital bed where she can move her daughter? Intersectionality shows under themes of gender, class and disability, which in combination influence their living situation. The daughter has been affected by the toxic waste and is severely disabled, and the mother has become the main caretaker. It also expresses class in terms of hoping for future economic compensation, currently lacking medical equipment and funds to supply them. The spatial themes also intersect with gender, disability and class: the two women are bound to the house, to their home since they cannot afford hospitalization or an in-house nurse.

An illustrative quote with multiple intersectional themes and time-space relationships can be found below, from the letter to the Swedish government, sent by the UN Special Rapporteurs:

"Some of the residents of the area have since been rehoused by the Chilean State, although many others are still living there. Where families have been relocated, their empty houses were afterwards occupied by vulnerable Chileans, migrants, asylum seekers and indigenous persons in the Cerro Chuño sector, including among them children, adolescents, women, elderly people, people with deteriorating health conditions, and disabilities, most of them in socio-economic conditions below the poverty line, without any state protection against surrounding dangers and exposure to toxic waste. According to the information received, hundreds remain in the informal settlement Cerro Chuño despite the risks to their health, due to the lack of alternative accommodation or effective resettlement." (OHCHR, 2021a, p. 3-4).

The UN conceptualizes time in past and present tense, they also bring up intersectional elements of who is living there, and spatial elements such as local and national. The intersectional elements are clearly highlighted as important to the case for the UN. Slow violence is evident in different ways – the time it takes to be rehoused, the lack of state protection and that both results in extended exposure time to the toxic waste, risking the health of the population.

6.3.2　Intersectionality in group B and C

In group B and C, representing Boliden and the authorities, intersectional themes are less frequent. Therefore, the two groups appear in the same section, which also makes the analysis more comparative.

Throughout Boliden's documents, intersectional themes could only be found in the following statement:

"The same year as the smelter sludge was relocated, Boliden learned that the material which had been exported to Promel many years earlier was suspected of having caused health issues among people living close to Promel's former facility. offered on numerous occasions to make the company's experts available to assist the authorities in Arica, but these offers were never accepted." (Nilsson, 2021, p. 4)

Intersectional themes above include proximity-spatiality of health issues among the population, as well as temporality as Boliden was first aware of these "suspicions" in 1998 (Nilsson, 2021, p. 4). A rather invisible intersectional theme is class. The reason behind why Boliden's offers "were never accepted" was due to lack of funds in the community. Boliden required the community to pay for the company's assistance including business class flights from Sweden to Chile and the salary of toxicology experts (OHCHR, 2021a, p. 5).

In sum, Boliden's intersectional theme are rather vague and obscure. They do not mention class straightforward, neither that their help required funds from the community, nor that the homes next to Promel's facility the belong to a low-income housing project. Furthermore, Boliden's assistance could be interpreted as an effort to remediation and environmental justice, but they hide the class aspect in why it did not happen. Thus, by not explicitly acknowledging the intersectionality of the affected, Boliden obscures the slow violence of class and disability. One can also argue that Boliden explicitly hinders environmental justice through requiring payment from poor communities.

From group C there is one statement referring to intersectionality. It represents the support within the Swedish state, expressed in a government debate (Delgado

Varas and Bolund, 2021). The debate was initiated by Lorena Delgado Varas (left-party) who expressed her concern in the following way:

"The whole family was tested in 2000, and they had significantly elevated levels of arsenic and lead. Patricia's son has now lost his eyesight and has a disability. Her eldest daughter has had a miscarriage. People in Arica describe life as a pilgrimage between hospitals and health centres." (Delgado Varas and Bolund, 2021, p. 4)

Delgado Varas' statement includes intersectional themes of disability and gender put into time-space relationships. The disabilities are caused by spatial proximity to the waste, which appears in the high levels of toxins. The diseases are also communicated in time – with causality in the present "has now lost his eyesight", and a gendered past as the daughter had a miscarriage. However, the metaphor in the last sentence shows the true time-space connection. "Pilgrimage" has both spatial and temporal connotations, it is a connection between distance and duration. It belongs to the intersectional theme of disabilities as life is "between hospitals and health centres", showing the spatiality of care in the form of location, and the temporality as this pilgrimage is time-consuming.

Delgado Varas explicitly refers to intersectional spatio-temporalities in a way that highlights slow violence. The fact that she makes these statements in a powerful institution like the Swedish government, shows that portraying slow violence through intersectional supports the claim for environmental justice.

6.3.3   Summary of intersectional analysis

In the sections above I have displayed the intersectional themes occurrence between the three actor groups. The analysis shows the continued relevance of Davies' (2019) question "out of sight – to whom?". Through the intersectional lens, time and space are shaped by the structures of oppression class, gender and disability. By shedding light on the oppression and the limitations they cause, group A and C portrays slow violence which supports the claims for environmental justice. Group B, however, does not acknowledge the intersectional details of the community, thus obscuring their limitations in terms of income and disability. The intersection of the latter structures is kept un-seen, which is a central reason to why slow violence is dangerous. In this way, the occurrence of slow violence is ignored and thus limits any claims to environmental justice.

7   Conclusion

This thesis has investigated time and space of slow violence through the decolonial and intersectional perspectives. In analyzing the frequency of *coloniality* between Western linear time and non-Western *pacha,* one can conclude that the previous time-conception ignore the long-term and holistic view of the case which is a fundamental aspect of the *pacha* worldview. When disconnecting time and space from each other and simplifying the scales they operate on, slow violence is ultimately obscured as it hides the causality between act and consequence. In this way, *coloniality* strategically limits environmental justice from taking place, asserting responsibility to no one.

The frequency of intersectional themes and their manifestation in different types of time-space relationships show that slow violence can be seen and un-seen depending on the actor's choice.

The two-fold analysis ultimately sheds light on how time and space can be mobilized in different ways in order to enforce the position of the actor. The many types of time-space relationships lead to a diversity in the arguments. The actors in group A, representing and amplifying the voices of the affected community, makes slow violence visible through specific time-space connections. Group C, representing the actors "in-between", sheds light on slow violence in some cases but others not, depending on if they prioritize the claims of the actors or if they prioritize the defence of their own position. Group B has a complete focus on defending their position so to not show any evidence that could lead to actions of reparation and compensation, which would be needed for the realization of environmental justice.

The Arica case represents a transnational litigation process and a tragic catastrophe following toxic waste dumping of the global North in the global South. Unfortunately, environmental justice has been very limited to this day. More research is required on the slow violence of toxic waste dumping, with specific regards to decoloniality and intersectionality. Slow violence is an elusive concept;

thus, it deserves more scholarly attention so to further explore its pitfalls and potentials to environmental justice. The future for the community in Arica remains unclear, but one can hope that more societal attention and awareness of the case can lead to unveiling the harms of slow violence and expose the needs for environmental justice for the Arican people.

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9 Appendix

9.1 Tables of data collection

No.	Title	Year	Type	Author	Additional info
	UN Correspondence				
1.	Report of the Special Rapporteur on Human Rights. Communication No AL SWE 2/2021.	2021	Letter from OHCHR to the Swedish government	UN Special Rapporteurs	Ref. AL/SWE 2/2021
2.	Report of the Special Rapporteur on Human Rights. Communication No AL OTH 90/2021.	2021	Letter from OHCHR to Boliden Mineral AB	UN Special Rapporteurs	Ref. AL/OTH 90/2021
3.	Report of the Special Rapporteur on Human Rights. Communication No AL CHL 1/2021	2021	Letter from OHCHR to the Chilean government	UN Special Rapporteurs	Ref. AL/CHL 1/2021 (In Spanish)
4.	*Communication from Special Procedures*. Stockholm: Government Offices of Sweden.	2021	Letter to OHCHR from the Swedish Government	Swedish Ministry for Foreign Affairs	Ref. AL/SWE 2/2021

No.	Title	Year	Type	Author(s)	Additional info
5.	*Boliden's Response to your letter of 23 March 2021.*	2021	Letter to OHCHR	Boliden Mineral AB	Ref. AL/OTH 90/2021

No.	Title	Year	Type	Author(s)	Additional info
			Media sources		
1.	*Arica* (Sweden: SVT).	2021	Documentary	Edman, L. and Johansson Kalén, W.	Available at: https://www.svtplay.se/video/31616918/arica-en-svensk-giftskandal Length: 1h 33 min.
2.	*The Swedish Cemetary.* Vargas, R.	2021	Video	Arica Community	Available at http://toxicjustice.org/the-swedish-cemetery/ Length: 4 min 25 sec.
3.	*Interpellation 2020/21:772 Sveriges ansvar för giftigt avfall i Chile.* Sveriges Riksdag.	2021	Debate in Swedish Government. Video and transcript.	Per Bolund and Lorena Delgado Varas.	Available at https://www.riksdagen.se/sv/webb-tv/video/interpellationsdebatt/sveriges-ansvar-for-giftigt-avfall-i-chile_H810772 Length : 21 min 35 sec.

No.	Title	Year	Type	Author(s)	Additional info
	Other sources				
1.	*Arica Victims KB v Boliden Mineral AB*	2019	Court case	Hovrätten för Övre Norrland	Case number T 294-18
2.	*Access to legal remedies for victims of corporate human rights abuses in third countries.*	2019	Report	European parliament	Available at https://www.europarl.europa.eu/thinktank/en/document/EXPO_STU(2019)603475