Environmental Justice and mining
Past and present spatialities

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Abstract

Environmental justice aims to simultaneously face environmental collapse and social disparities, fostering the reproduction of material conditions that underlies the habitability of life on Earth. Extractive operations are one of the main features of capitalism and there is no foreseeable future without mineral extraction. Intensive mining contributes to environmental harms meanwhile prevails over trust on technocratic solutions to ecological degradation. Considering mining closure processes and ongoing raw material extraction, this report aims to present a preliminary analysis of empirical data gathered during a doctoral research conducted in both Iglesias (Sardinia) and Vazante (Minas Gerais, Brazil) on the ontological dimensions of environmental justice in extractive contexts. This report is particularly focused on drawing out ways from which extraction underpins communities' relations in and with territories in different historical periods and geopolitical contexts.

Keywords: Environmental justice; ethnography; political ecology, extraction.

Introduction

This research report is a preliminary presentation and analysis of empirical data gathered during my doctoral research[1] conducted in both Iglesias (Sardinia) and Vazante (Minas Gerais, Brazil) on the ontological dimensions of environmental justice in extractive contexts. The research, entitled "Terristories of Environmental Justice. An empirical outlook on the verge of mining extraction in Minas Gerais and Sardini" aims to explore how ontological dimensions are contemplated within a global environmental justice framework as a threshold for inhabiting territories amidst mining liabilities.

Thinking about the matter on ontological terms implies questioning how to establish environmental justice as a category that also engenders realities within the environment. It assumes the existence of a relational dimension in concrete territories portrayed (intentionally or not) as being extraction sites and disposable spaces.

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For this purpose, qualitative research was carried out for about six months between August 2020 and April 2021. Following an action-research approach and an in-depth ethnographic practice, I lived the first three months in San Benedetto (Iglesias) thanks to a collaboration established between me and the *Fondazione Cammino Minerario di Santa Barbara* (Mining Trail of Santa Barbara Foundation). In the remaining months, I lived between Vazante and Belo Horizonte. In both cases, participation and observation within activities carried out by local community actors in everyday life were at the heart of the research, alongside observational walking.

The main interlocutors of the research are miners and their families, experts, local administrators and activists. Open-ended interviews were conducted with some of these actors. This report is particularly focused on drawing out ways from which extraction underpins communities' relations in and with territories in different historical periods and geopolitical contexts.

Despite these differences, both realities are permeated by colonial processes that underlie mining ventures, reshaping local identities and world conceptions. In both regions, the mining corporation installment has meant the transfer of local power into the hands of private capital, which subsequently gained a greater capacity to influence public policy.

Digging theoretical contributions

Mining is frequently studied by critical social theory literature on extraction/extractivism. Although used as synonyms, such terms express particularities. Extraction describes historical and contemporary processes of forced removal of raw materials and life forms from the earth's surface, depths, and biosphere (Mezzadra & Neilson, 2017). *(Neo)extractivisms* emerged in Latin America literature to define both a way of appropriating nature and a productivist development model, where it is possible to identify a change in the role of the State during "progressive" governments in capturing and redistributing surplus (Svampa, 2019).

Another research field that also employs the term extraction – and its variant, *resource extraction* – is anthropology, revolving around descriptions of how extraction destabilizes cosmologies, social organizations, ecological practices and knowledges. Rather than providing a precise and immediate concept, the category is used to evoke the role played by different global actors across places and scales (Jacka, 2015).

Since the work of Nash (1993 [1979]), who turns attention to cultural transformation related to mining and Godoy, who analyzes «both the geological and economic infrastructure of the firm/industry as well as their secondary socio-political and ideological dimensions» (1985, p. 211), much has been produced theoretically.

More recently, certain contributions deserve attention. From the lens of time, mines are perceived as originators of landscapes that present material and immaterial inscriptions and materializations in themselves of past, present and future dynamics (D'Angelo & Pijpers, 2018). At the intersection between the social and the environment, the work of Jacka (2018) interrelate domains such as livelihood transitions, transformations in corporate practices, environmental impacts of extraction and the multidirectional processes through which social conflicts take shape (D'Angelo & Pijpers, 2022).

The anthropology of mining also consolidates a fruitful field of inquiry where the "minescape" acquires proeminence, because it «characterizes extractive terrain as more than simply economic terrains or stagnant landscapes. Furthermore, minescapes reiterate the way that these sites are also complex socio-cultural terrains» (Ey & Sherval, 2016, p.178).

Therefore, beyond material aspects, mining is understood to include and enclose within itself socio-cultural and environmental discursive processes that are interwoven in non-linear ways. How does a "minescape" allow an understanding of the main discourses that permeate different temporalities? How does it shape the actors involved in extraction and in turn is shaped by them? These are some of the questions that arise, tensioning issues that permeate notions of time and space, highlighted by the concrete cases.

Participatory observation in a minefield

The present research was carried out both in Iglesias (Sardinia, Italy) and in Vazante (Minas Gerais, Brazil). Both municipalities were targets of zinc extraction ventures. While mining activity in the former was closed down at the turn of the century, in the latter it has been active since the 1960's.

Zinc and lead mining in Sardinia dates back at least four thousand years, but gained special dimension in the *Sulcis – Iglesiente – Guspinese* region around 1850, mainly by Belgian and British private initiatives. Then it began to reach an industrial level as a result of legal, political, technological and historical processes.

After the Second World War, the island saw both a decline in the mining activity and the increase of public funding for conversion and verticalization[2] plans during the 1960's. Extraction lasted until the 1990's, a period when most of the mines were shutted down. Strategies to give a "second life" to underground mines in Sardinia found their apex within the establishment of the *Parco Geominerario, Storico e Ambientale della Sardegna* (Geomineral, Historical and Environmental Park of Sardinia), the first of its kind in the world to be recognised by the UNESCO in 1997 (Atzeni, 2017; Sanna, 2015).

However, the presence and legacies of the extraction period are far from over. According to the Italian Institute for Environmental Protection and Research, Sardinia is the Italian region with the highest number of abandoned/closed mining installations that have serious negative effects on the environment or which, in the short or medium term, could pose a serious threat to human health or the environment (*Istituto Superiore per la Protezione e la Ricerca Ambientale*, 2017). Furthermore, it is worth mentioning the clashes established between mines' closure processes and reconversion projects in the region (Bachis, 2017).

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[2] Verticalization processes of the extractive industry refer to primary and secondary sectors unification in order to produce goods with high added value (Sanna, 2014).

Figure 1: Wreckages of the mining industry in San Benedetto, Sardinia (Personal Archive, 2021).

Such a background spawned and was affected by latent social conflicts that last to the present. Talking about the contemporary period, an interlocutor stated that the contamination caused by mining "also contaminates consciousness", as a criticism of a perceived "nostalgic insistence" that the local population has in relation to the mining epoch. On the other hand, other participants maintained that "you were better when worse" and that "holes remained". In conversations, I frequently heard the words "abandoned" and "disadvantage" to describe the community that emerged with the end of mining. Many still hope and see as plausible a mining reopening.

Such ambiguities are epitomized in the Monteponi red mountain, which is an open-air landfill full of toxic substances, which at the same time is the symbol of an era that brought progress and development to Sardinia.

Another aspect concerns the mining memory and its historicization processes. Whether in the murals or in the stories told, miners' accounts of underground work and struggles for better working conditions prevail. Environmental disturbances provoked by mining and mentions to the perspectives of women and children who lived through this period are rare or sparse.

However, some bottom-up initiatives are carried out mainly by women activists who seek to overcome the mining phase, denouncing the region's permanence in subordinate conditions and proposing the consolidation of other activities that can provide income and future prospects. A participant in a project that fosters organic farming through ancestral grains salvaging said that "we want to get out of mining and not consider the land a mine", conceiving a less predatory future for the region.

During an informal conversation, an interlocutor sustained that "the abandoned history is worse than the destroyed one". This translates how a kind of attachment was formed from and beyond the aftermath of mining closure, which currently has to do with attempts to rescue a pre-mining past romanticized in the figure of pastoral and peasant ancestry; the insistence on the

(re)activation of symbolism and archetypes linked to extraction and future projections based on a critical reconstruction of the mining past.

Figure 2: Painted mural in San Benedetto (Personal Archive, 2021).

All of these approaches seem to be crossed by a void, finding barriers in the contemporary dynamics of digitalisation, financialization and the blurring of boundaries and traditions. Mining presence and present dependency *despite* its physical closure should be more scrutinized from a value and identity perspective, not only as an economic fact.

This implies recognising that mining brought with it prospects of emancipation and modernisation to territories historically marked by successive phases of exploitation by external hands. Subsequently, it finds resonances in the way communities process their mining heritage in the present and think about the future, also signaling the need for a structural/multidimensional analysis that recognises the immaterial dimension of the topic[3].

Finally, regarding environmental justice more concretely, it is important to emphasize that the ecological debate is by no means denied or rejected, but is not necessarily linked to environmental disturbances caused by mining. Changes provoked by global warming, such as droughts are perceived, while the level of contamination is still controversial.

Mining in Minas Gerais dates back to the colonial period with the conquest of the region and subsequent exploitation of the minerals found there from the 18th century onwards. In 2018, among the ten most mined municipalities in Brazil, seven were in the state of Minas Gerais. Not coincidentally, it is the state that most registers mining-related conflicts (Alves *et al.*, 2020).

The northwestern part of the state of Minas Gerais does not have a history directly linked to mining, with farming and cattle raising being the main activity developed in the region. Howe-

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[3] A participant once admitted missing the noises produced by the machines, because they used to dictate life rhythms. This is an example of an immaterial dimension.

ver, the expansion of extraction to territories that are not traditionally mining territories is a trend that is being consolidated, whether by the exhaustion of mines in the south of the state, the development of new technologies, and/or the pressures of the market and local governments.

The mining sector has not been immune to the rise of environmentalist practices and discourses, the precarization of labor and global warming. The municipality of Vazante, situated in the north-west of the state, particularly witnessed the discovery of zinc in the 1950's and the beginning of a new production cycle that came to coexist with a historic small-scale farming model and the locality has become the largest zinc-producing area in the country. It was initially carried out in the open air. Nowadays, the mine is underground.

The Brazilian developmentalist discourse underlied the settlement of the mining complex at the same time that globalization and the flow of demand for raw materials began to change worldwide (Porto-Gonçalves, 2021).

In Vazante, ongoing extraction is characterized by the use of cutting edge technology such as wireless detonation[4] and the establishment of partnerships between the company responsible for the operation (Nexa Resources) and the local government.

During a conversation with a public administrator, it was told that many projects carried out by the municipality rely on direct funding and partnership with the company, including those related to the environment.

In recent decades, changes in labor relations have modified the type of bond that is created in relation to the company. With an ever-decreasing number of permanent staff, the fluidity of work contracts and outsourcing are realities observed. Immigrants from other parts of Brazil moved to the city, working under temporary contracts.

However, this does not mean that the company's influence and existence are disregarded as causative agents and providers of certain modifications not only in relation to the socio-economic life of the town, but also with regard to urbanization processes and the use of natural assets.

During an informal conversation with an interlocutor, she drew attention to the fact that the city was not made for people, in reference to the urban structures that were created to meet the demands related to mining activity. This is the case of the huge warehouses of mechanical repair shops and steel mills. The same person said that the energy produced is primarily directed to the mining plant, located a few kilometers from the urban area. Therefore, it was not uncommon for citizens to be without electricity, while the mine did not lack power.

Despite the presence of Nexa in the community imagery at least since when it belonged to the Votorantim Group, cultural manifestations linked to faith largely constitute the local identity alongside the buses, sheds and machines that symbolize and indicate mining permanence and intervenience in daily life.

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[4] https://institutominere.com.br/blog/nexa-realiza-em-vazante-a-primeira-detonacao-wireless-em-mina-subterranea

Figure 3: View of Vazante's city entrance, which reads "Be welcome to the capital of Zinc". In the background, a statue of the city's patron saint (Our Lady of Lapa) (Personal Archive, 2022).

Within the company, a participant working in the complex said that the concepts of innovation (especially that of technology) and environmental management are incorporated into the ESG (Environmental, Social and Governance) and CSR (Corporate Social Responsibility) repertoires.

The involvement of the activity in the local dynamics has created a kind of bubble that is even exemplified by the fact that it is difficult to find housing available, in parallel with the boom in civil construction. While the future and life of the mine are uncertain, the community's concern about the closure of the activity is discrete and oscillatory. Some are more affected than others, especially the part of the population that does not directly depend on the livelihood from the sector, whereas other actors focus on the issue of job opportunities. "Nexa never goes away" is a statement that coexists with the fear that the place might become a "ghost town" in the future.

This is because small-scale and traditional farming has also given way to large-scale farming, and the region is now a stage for the expansion of the soybean frontier. This even represents contrasting power dynamics, since in the municipality the influence of certain economic groups are perceived in the realm of institutional politics. Many of the former mayors were or are landowners.

One of the main environmental injustices that are identified and felt by the general community is the slumping of dolines, a phenomena of circular depression very common in karst terrain such as that of Vazante. Despite being relatively characteristic in places with such a geological formation, many local actors attribute its frequency and acceleration to mining activity, which drains water from the phreatic layer. According to an activist, "the river has suffered the most from this mining activity". The contamination of water and its scarcity were also recurrent topics in some interviews, and were attributed by some to the introduction of mining.

Figure 4: View of a dolina that opened in January and the intervention to cover it with earth in Vazante (Personal Archive, 2022).

It is worth mentioning that the Brazilian geopolitical and historical dimension also draws particular repercussions with regard to the shaping of value and identity relations linked to mining. Traditional communities living in the same zone but in more distant rural areas, such as *quilombolas*, apparently live on the margins of the effects of mining.

However, this is not the case. Two aspects greatly influence the scope of mining activity in the dynamics of these communities. Firstly, with regard to the loss of traditions and the interest of the younger generations in migrating to the city and working in the extractive sector. The second, in relation to climate change and the use of land and natural assets, such as water, which have been significantly compromised not only by the worsening environmental crisis, but also due to the rise in prices and cost of living. As stated by one participant, "things have become very expensive, rain, today there is little".

Finally, it should be noted that during the time I was there, the fieldwork was hampered by the fact that it rained almost continuously. Although rains were common at the time of year when the research was carried out, many admitted that the frequency and volume were not at tolerable levels. Indeed, the mine's own operation was curtailed due to flooding[5].

Common marginalities, distinct temporalities.

From what has been outlined so far, I highlight that conflicts in extraction zones often manifest themselves in ways other than direct opposition or resistance that create adversarial movements. In this sense, the insights that can arise from ethnographic field research are valuable because they sublimate subtleties that often go unnoticed in macro-scale analysis.

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[5] https://epocanegocios.globo.com/Empresa/noticia/2021/03/epoca-negocios-nexa-suspende-operacao-em-mina-subterranea-em-mg-apos-deslocamento-de-solo.html

Environmental justice scholarship often focuses on state-society relations within an institutional framework, while the literature on mining conflicts generally targets on movements reactions to mines in activity (adversarial movement protest).

Those are not sufficient to explain how stakeholders conceive and live environmental (in)justices in territories where conflicts are revealed through other power dynamics and distinct temporalities. This first outlook offers the possibility of reading ecological ways of being within a (post-)mining territory.

I argue that environmental justice could move beyond the conflictuality framework, putting values at stake while considering structural patterns of disparities reproduction and its local implications. The ontological dimension of environmental justice may reside in identifying how local practices involving the appropriation of intangible mining heritage coproduce territorial narratives that provide meaning to a specific temporality. Outside time, this temporality is instituted by mining as an activity that produces worlds even when it ceases, which in turn is carried out according to colonial precepts.

An initial assessment approximates both realities with regard to their positions as suppliers of raw materials to meet demands coming from the outside that internally produce externalities.

More than reflecting the insertion of both regions in the global scenario in a subaltern position, analyzing ways of resisting mining disturbances that emerge on the level of the immaterial is a challenge regarding the comparability of both cases. A successive task is to establish an analysis that takes into consideration the geopolitical, historical and cultural differences between the two contexts. Nonetheless, colonial processes connected to mining underlie both territories, and this friction point may be appropriate to approximate them in a global framework.

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