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Mapping Mining's Temporal Disruptions: Understanding Peruvian Women's Experiences of Place-attachment in Changing Landscapes.

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Abstract

The importance of mining temporalities and gendered impacts of mining activity are receiving increasing academic attention. This article contributes to these debates by addressing the impacts of large-scale mining activity on women's sense of place-attachment and landscape, focusing on Cajamarca, Peru, home to the Yanacocha mine since 1993. Using women's hand-drawn maps representing 'sites of change', the article critically examines the various ways in which women communicate mining as deeply affecting their everyday lives in gendered ways. This mapping method tapped into emotional connections to place and local landscapes, and by incorporating stories and maps of both women opposing and supporting further mining expansion in the region, the article goes on to show that both groups share an understanding of the Yanacocha mine as a disruption of time and place.

Keywords: *natural resource extraction, women, Andes, mining temporalities, mapping, methodology*

Introduction

Cajamarca region in the northern Peruvian Andes has become an emblematic site in the struggle against mining expansion in Latin America. However, when Minera Yanacocha SRL (hereafter: Yanacocha), a joint venture by the US-based Newmont mining corporation (51 percent), the Peruvian Buenaventura (44 percent) and the International Monetary Fund (5 percent, presently owned by the Japanese Sumitomo Corporation) began operations in 1993, it

faced little opposition. As promised economic growth and job opportunities remained limited while impacts such as pollution and displacement became evident, local opposition to mining grew (Li 2013). When Yanacocha announced plans to open a new gold and copper mine in Cajamarca, Conga, large-scale protests erupted in 2011-2012, including strikes, marches, and extended monitoring of high-mountain lakes, on the grounds that Conga would cause pollution of water and land, and have negative impacts on lives and livelihoods (Paredes Peñafiel and Li 2019). The Conga project was indefinitely suspended in 2016.

Furthering debates in feminist geography on visual and creative research methodologies as well as on gendered impacts of natural resource extraction, I critically examine the effects of mining activity on Cajamarcan women's gendered temporal experiences of landscape and place-attachment by highlighting outputs of an innovative mapping method.. The following sections set out existing research on the gendered impacts of mining and theories of place, landscape, and place-attachment. The next section contains methodological discussions and considerations, focusing particularly on the use of a creative mapping method contributing to understanding women's experiences of change in place. Utilising maps contrasting a *before* and *now* the subsequent sections critically examine visual representations of the mine's gendered impacts on land, water, livelihoods, and safety, highlighting the impacts women themselves communicate as most profound. By exploring accounts of women who oppose, as well as of women who support mining, I argue mining activity becomes associated with a disruption of continuity in place and time, breaking long-standing practices of meaning-giving and belonging in place.

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Gendered Impacts of Mining

Large-scale mining is associated with socio-environmental impacts across scales, including pollution of land and water systems, impacts on biodiversity, depletion of groundwater, decrease of social capital, as well as displacement and forced migration, all impacting people's lives and livelihoods (Brain 2017; Morales 2019; Ulloa 2020). The particular *gendered* impacts of large-scale mining are receiving growing academic attention around the world. While such impacts may differ depending on locations and circumstances, overall this literature highlights women are disproportionately affected by the environmental impacts of mining on water, crops and livestock due to their gendered roles and responsibilities, including food production and care work (Ahmad and Lahiri-Dutt 2006; Deonandan and Bell 2019; Jenkins 2014b; Morales 2019; Ulloa 2020). These impacts are further exacerbated by loss of land and access to communal land and forests, both widely associated with mining. Communal land is often mainly used by women, and rarely compensated for (Ahmad and Lahiri-Dutt 2006; Ballard and Banks 2003; Jenkins 2014b; Kitula 2006). Furthermore, loss of land is often linked to a loss of connection to ancestry and traditional ways of life and meaning giving; reproducing cultural values and holding families together are widely considered women's responsibilities (Deonandan, Tatham, and Field 2017; Jenkins 2014b).

Due to their care-giving roles in the home, women are often responsible for looking after family members whose health is negatively affected by mining, on top of facing particular health risks themselves as they may be exposed to higher levels of toxins more frequently, due to their gendered responsibilities for, and interactions with, water and agricultural products (Ahmad and Lahiri-Dutt 2006; Deonandan, Tatham, and Field 2017; Perks and Schulz 2020).

At negotiations with communities, women are often either absent altogether, or report their inputs and suggestions are dismissed (Ahmad and Lahiri-Dutt 2006; Li 2009a; Morales

2019; Rickard 2020; Rondón 2009). While these meetings often constitute mere formalities (Kalluri and Seema Mundoli 2010), Ward et al. (2011) found that projects proposed by men at negotiations are far more likely to be put into practice than those proposed by women. Mining jobs are less likely to go to women, due in part to a global perception of 'miners' and mining as masculine. Work on women miners highlights, among other things, sexual harassment, lower pay, and less advancement opportunities, as well as pressure to keep fulfilling their gendered domestic roles (Byemba 2020; Deonandan and Bell 2019; Lahiri-Dutt 2012; 2019; Lutz-Ley and Buechler 2020; Morales 2019; Perks and Schulz 2020).

Inequalities in financial benefits (i.e. jobs or compensation) can increase women's dependency on men, resulting in further power imbalances, social changes, and tensions in communities, including more negative perceptions of women's cultural roles (Ahmad and Lahiri-Dutt 2006; Deonandan, Tatham, and Field 2017; Jenkins 2017; Simons and Handl 2019). Furthermore, mining is widely associated with men's increased consumption of alcohol, gambling, and prostitution, as well as increases in teenage pregnancy, sexually transmitted infections, and gender-based violence (GBV) (Caretta and Zaragocin 2020; Deonandan, Tatham, and Field 2017; Lahiri-Dutt 2020; Leinius 2021; Morales 2019; Simons and Handl 2019).

However, literature also stresses women should not be framed simply as victims of mining, (Kuo, 2020; Lahiri-Dutt, 2012, Simons and Handl, 2019). A growing body of research focuses on women's right to mine and within mining (Byemba 2020; Lahiri-Dutt 2019; 2020). Research also highlights women's inventiveness and resilience both within and outside the mining industry (Lahiri-Dutt 2019; 2020; Lutz-Ley and Buechler 2020; Simons and Handl 2019). In Latin America, women play pivotal roles in resistance to mining, including based on mining's gendered impacts on women's bodies and water (Boudewijn 2020; Caretta et al. 2020; Jenkins 2014a; 2017; Rondón 2009). This research adds to the

significant literature on the gendered impacts of mining by exploring how mining affects women's meaningful relationships with place and landscape, highlighting those impacts that women themselves foregrounded as most important. To do so, I build on theory exploring place-attachment with a participatory mapping method, as explored in the following sections.

Mining Temporalities in Landscape and Place-attachment

D'Angelo and Pijpers (2018, 215) highlight the notion of 'mining temporalities', and the need to increase academic attention to mining as '*a complex set of multiple temporal processes*'. These may be found in physical alterations of the landscape; seasonality and cycles connected to mining; politics of time and temporal inequalities; and 'entanglements of past, present and future', which is the main strand considered below. Particularly, I critically examine mining temporalities as entanglements of the past and present, as experienced by women in place, focusing on landscapes and place-attachment, concepts often used, but little explored, in studies on human relationships with their changing environments (Galway et al. 2019) (N.B. elsewhere, I have explored women's desired futures in place (Boudewijn 2021)). Definitions of 'place-attachment' vary, but generally include the meaningful, emotional connections between people and places, including symbolic, affective and behavioural, and individual and collective, connections, often particularly linked to places considered 'home' (Gustafson 2001; Rishbeth and Powell 2013; Scannell and Gifford 2010). Various authors have highlighted the temporal aspect of place-attachment, as a sense of belonging and continuity between past, present and future are often formed through repeatedly experiencing place. Through memories, lived experiences, and the meanings and emotions attached to these, the past becomes a vital part of people's sense of place-attachment (Gagnon and Desbiens 2018; Gustafson 2001; Scannell and Gifford 2010; Thwaites and Simkins 2007). Indeed, Askland

(2018, 230) highlights the importance of meaning-giving to place and time in mining conflicts:

> This conflict is pragmatic in the sense that mines require access to the land and, accordingly, removal of any obstacles such as residents or land uses occupying the surface from which the minerals are to be extracted. At the same time, it is symbolic and political, encapsulating questions of the meaning of land and landscapes, notions of continuity and discontinuity, temporality and power.

Inherent in landscapes are perspectives of how land should be used in place; it is a visual representation of meaning-giving to the land (Li 2009b; Trudeau 2006). As landscape is performed and created, it becomes imbued with meaning and values linked to memories and actions, in seasonal cycles and everyday life, and ultimately, to the way people understand themselves within their physical environment (Askland 2018; Li 2009b; Rishbeth and Powell 2013; Trudeau 2006). As emotions and embodied experiences are bound up in place and landscape, both become more than their physical location: particular physical characteristics come to represent, be shaped by, and shape activities, memories and meaning, as well as a feeling of belonging and identity over time (Askland 2018; Rishbeth and Powell 2013). Immersion into, and ongoing engagement with, natural and built landscapes, and their associated familiarity, are crucial factors linking people's memories and connections to the landscape, ultimately making it understood as a physical link to the past; not in nostalgia, but in continuity and on-going processes of meaning-making (Askland 2018; Gagnon and Desbiens 2018; Rishbeth and Powell 2013).

To rupture a landscape, then, means to rupture established ideas about the past, present and future. New landscape designs alter people's relationships with place, as the familiar transforms rapidly and beyond recognition, not just literally, but emotionally, as it becomes

associated with violence, danger, deception, and the unknown (Askland 2018; Askland and Bunn 2018; Paredes Peñafiel and Li 2019). Landscape, then, may become a physical representation of mismatches in power (Trudeau 2006).

However, landscapes and places are never stable. At any time, a place will be made up of a multitude of identities and meanings. As places are inherently made up of social relations that change over time, it is inevitable that places are always changing, and their meaning will be contested in these processes (Massey 1994; 2005). This means that when objections to change in place are communicated alongside mobilisations of the past as a fixed point in time, the clash is over the location's political and social identity (Massey, 1994). Importantly, Cohen (1985) explores how communities may see change as an inherently negative thing when it is considered beyond their control, e.g. in large-scale processes associated with 'modernisation' and globalisation (also Massey [1994]). These processes may threaten the 'sense of self' of communities, causing a 'misfit' between place, belonging, identity and attachment (Cohen 1985; Scannell and Gifford 2010). In response, communities may make strategic use of the past and memory according to current needs and circumstances; in other words, resistance based on history in place does not necessarily come from a longing for a static, assumed past identity, but may rather use the past to inform and improve upon the present (Cohen 1985; Massey 1994). As particular visions about past and future are mobilised by social movements, they actively become part of the present (De la Cadena 2008; Himley 2014).

While the changing interpretations of place and landscapes is sometimes mentioned as an important side-note by other scholars (De la Cadena 2010; Grieco and Jenkins 2021; Li 2009b), it demands more particular attention, especially as literature on the gendered impacts of mining have little addressed place and temporality, and these need to be recognised to appreciate these impacts holistically. Furthermore, with the exception of

Askland (2018; also Askland and Bunn [2018]), academic attention on the disruption of place-attachment often goes to forced relocation or voluntary migration, rather than those who do not relocate (Gifford and Kestler 2008; Gustafson 2001; Rishbeth and Powell 2013). This work contributes to these debates by critically exploring how the Yanacocha mine becomes communicated as a rupture in not just place, but time, in the experiences of Cajamarcan women. This is done alongside maps drawn by participants, a research method I outline below.

Mapping Changes in Time and Place

The work presented here is based on qualitative data collected in Cajamarca over seven months in 2016–2017. I used a feminist methodology with the aim of forewarding historically marginalised voices (Sangster 1994; Parpart 1993), valuing individual women's stories in their own right, rather than comparing them to men (see for example Jenkins [2014a]; Singh [2007]), as well as being mindful of power relations in the research, as explored below, acknowledging my positionality as a white, global North researcher (McIlwaine and Datta 2003; Sultana 2007).

My initial contact with women in Cajamarca was facilitated through the NGOs CATAPA, where I have worked, and LAMMP, the Latin American Mining Monitoring Programme. I conducted extensive participant observation with women's and environmental organisations in urban and rural areas in the impact zones of the Yanacocha and/or planned Conga mines. I conducted and recorded twenty oral history interviews with women aged 27 to 66, in Spanish, the first language of all participants; translations into English were made by me. All data was analysed using thematic analysis, and pseudonyms are used for all participants.

Most participants had been involved in the 2011–2012 protests, attending public events and marches, fund-raising, and cooking for other activists. However, I wanted to include the voices of women supporting mining as well, as accounts of local people supporting mining are largely absent from academic debates on extractivism in Latin America, and can contribute to avoid homogenising women's perspectives (Singh 2007). That means the accounts of two women in favour of mining expansion are included in this article as well.

The oral history interviews were semi-structured, with open-ended questions allowing participants to highlight specific events that have made significant changes in their lives (Atkinson 1998; Singh 2007). To explore what mining-related impact a participant considered most important and/or what place they considered most deeply affected by mining, I asked each interviewee if they were willing to draw a map indicating sites of change in relation to the mine. Fifteen women participated in this exercise, some deciding not to, citing lack of time, or insecurities over their drawing skills. I explained I was not looking for beautiful or geographically accurate maps, while remaining careful not to push them to participate and accept their refusal to do so. I then gave the interviewees the creative freedom to draw whatever came to mind, and outputs varied widely. This is in line with the methodological discussion on participatory mapping by Kindon, Pain, and Kesby (2007, 17):

In work with marginalised or vulnerable people, one of the most important features of these types of method is their 'hands on' nature, and their ability to enable people to generate information and share knowledge on their own terms using their own symbols, language or art forms […] requir[ing] the researcher to relinquish control and take more of a back seat as a facilitator rather than director of the process.

This potential for visual methods to create more collaborative relationships between the researcher and the researched, and to give the less powerful more chance to use their individual voice, is increasingly recognised in the social sciences. A key benefit of these methods is that they are considered to obtain not just more, but different kinds of knowledge (Guillemin and Drew 2010; Packard 2008). Most participants seemed to enjoy the exercise, and laughing about little mistakes was a break from the 'formal' interviewer/interviewee relationship. However, as with other methods, the researcher remains in the most powerful position, both during the mapping process, where she decides what follow up questions to focus on, and in the next phases of the research, where she decides what to use and what not to (Guillemin and Drew 2010; Jenkins and Boudewijn 2020; Packard 2008).

In preparing and using this research method, I drew inspiration from some key ideas of participatory mapping and 'geophilosophy', highlighting how mapping may contribute to a wider narrative, focusing on locations familiar to the storyteller. In this way, the methods allow for the communication of implicit and local knowledge about daily life in landscape and place, and the power relationships experienced within them (Araujo de Almeida 2013; Crampton 2009; de Acosta 2007; Gagnon and Desbiens 2018; Sanderson and Newport, 2007; Sletto 2009). Furthermore, giving the more marginalised party the opportunity to create maps goes some way to challenge the Foucauldian power dimensions usually inherent in map creation, as 'standard' maps are often based on dominant western knowledge and ideas of shaping and creating the world (Gagnon and Desbiens 2018; Massey 2005; Sanderson and Newport, 2007; Sletto 2009).

In relation to conflicts over territory and natural resource extraction, the visual and creative is becoming recognised for challenging dominant discourses of extraction as development, and creating a shared understanding between different types of actors (Jenkins and Boudewijn 2020; Li 2019). Maps may be employed as a tool to strengthen claims to land

and territory by those who argue mapping can be a political act. This often involves aerial photographs and GIS, where maps may highlight or track physical changes (Crampton 2009; Gagnon and Desbiens 2018). I was similarly interested in the visual, political and emotional aspect of mapping, but the type of maps used here are different; hand-drawn, including a variety of locations and topics, and not always meant to be literal interpretations of reality. Indeed, Gagnon and Desbiens (2018, 50) affirmed that: *'classical cartographic tools and supports often prove to be inadequate when the content we seek to explore is of memorial, sensitive or affective nature, and even more so given that this content emerges from a different ontological system.'*, highlighting maps of sites important to the individual have a role to play in enhancing understanding of the impacts of environmental change. Indeed, the maps presented here give an extensive insight in the emotional impacts of mining's effects on place and landscape as experienced by women. Yet, this method has been little used in research related to women involved in social movements, and/or women at the extractivist frontier.

In this article, I focus on seven maps that clearly speak to the notion of mining temporalities and ruptures in landscapes. These are the maps where participants decided to represent a direct contrast between *before* and *now*. While all maps collected as part of this research hold a temporal representation of place (as do maps in general (Gagnon and Desbiens 2018; Massey 2005; Sletto 2009)), focusing on those maps that include two moments in time allows for a critical reflection on how place is experienced and contrasted over time, and how women frame these experiences as (gendered) impacts of mining, as well as the role this plays in sense of place-attachment. Furthermore, the inclusion of two maps from women who were broadly in favour of mining, voices that are not often heard in academic debate on mining in Cajamarca, allows for a critical reflection on the commonalities between the experiences of women with different viewpoints, and in doing so highlights the

merits of the mapping exercise in teasing out women's experiences of temporalities and meaning-giving in place. This is discussed in the subsequent sections.

Placing Gendered Impacts in Changing Landscapes

As Massey (1994) explores, geographies of places are highly gendered; and are, in turn, shaped by gendered interactions with them. In this section, I explore how the maps highlight some of the previously discussed gendered impacts of mining activity, and how this sheds a new light on understanding their experience of place over time. While several maps depict rural landscapes, all women included here currently live in urbanised areas. However, several have migrated from rural areas, and some still actively practice rural or urban farming practices as part of their livelihoods. The maps are presented alongside quotes from the oral history interviews related to the map.

Laura's map (figure 1) is the only one that directly features the Yanacocha mine. Laura (50) has been active in anti-mining mobilisations since 2011, and is a married mother of two, who raises guinea pigs in her home in Cajamarca city. She depicts two lakes that have been turned into mining pits, explaining:

[Figure 1 near here]

Laura: 'Here like it was before… this was a lake, and because of the shape, it was called '[Duck]'. Beautiful. Another – '[Heart]'. These, and many others, are now like this: a massive hole. There's nothing.'

Inge: 'Is this the mine?'

Laura: 'Yes. Here… in some places there is water, like this. Of this colour. In other places, like this.'

Inge: 'Red?'

Laura: 'Yes, red, green.'

Water plays a crucial role in many maps; perhaps not surprising, as it is the main focus of many anti-mining movements. Furthermore, water also plays a crucial role in shaping, and being shaped by, social relationships and practices, over time and place. It is also, as stated before, deeply gendered and associated with women and their responsibilities, and plays a role in revealing gendered and structural power relations (Caretta et al. 2020). Laura explained the far-reaching effects disappearing water and water pollution have on her everyday life: the city now only has running water for a few hours a day, and she has to take precautions to sanitise it, that she never had to take before. As a result, she worries about the health of herself and her children, and her ability to continue raising guinea pigs, which plays an important role in her household's income.

Gendered roles and responsibilities featured frequently in the maps. Beatriz (65) (figure 2) portrays the rural community where she grew up, and still farms. She, too, was involved in anti-mining movements and continues to campaign against mining expansion. Like Laura, Beatriz's resistance is based on the changes she perceived in her everyday life and livelihood; and the effect mining has had on the crops she grows, and the water she uses:

[Figure 2 near here]

What is lost is that, in my childhood, I knew clean water, clear water. And… years later, the waters came in a yellow colour, in a medium-green colour, [containing] lead. […] The land produced more: potatoes, these are potato plants, before, it was all green, it was all beautiful, right? And now, this is barley, and this is corn, now it appears with yellow stains, almost like the colour of the river, and this is the colour the oats have, the barley, the beans we sow, they come out with colours like this [orange], and before it wasn't like that. And they say it's because of the mines.

Building on Caretta et al.'s (2020) findings that women anti-mining activists from different parts of the world communicate their connections to water as embodied and emotional, the maps provide a tool for understanding how women's everyday actions and experiences of water degradation and dispossession play a role in associated motivations for protecting water. The mine itself, while not small, occupies just one physical location, but the changes it brings are seen, heard, experienced and practiced far beyond it – including in the landscape. While Beatriz did not draw the mine, it is present in her map in the discolouration of plants and the river, affecting her ability to continue living life as she always has, in the place she has always lived. Spreading pollution of water and soil, the mine becomes regarded as a powerful physical and emotional site of landscape disruption, with consequences reaching far beyond its actual physical location.

The mine's presence is also noticeable in the urban landscape, including in the growth of Cajamarca city. On the one hand, land dispossession in rural Cajamarca, a direct result of mining activity, has led to rural-urban migration and the growth of low-income neighbourhoods. On the other hand, the mine attracts high-skilled labourers from Peru's coast and abroad. Shopping centres, high-end real estate and expensive private schools have been constructed to appeal to this new demographic, visual representations of a new class divide in the city. Furthermore, the growth of the city has led to a decrease in green spaces. Again,

many women frame the mine as the central driving force behind the changes they observe in the landscapes they move through in their everyday lives, the central tipping point between *before* and *now*. For example, Ana (42, figure 3), had vehemently opposed mining expansion and continues to campaign for women's rights to water and subsistence, explains:

[Figure 3 near here]

This was the before. Before… the city had its houses, its streets… let's say up to a certain point, and here was valley, with a lot of vegetation. Even in the city, there were streets with beautiful orchards. […] What we have now… my goodness, it's a horrible concentration, everything is houses, houses, cement, cement, the city has grown enormously.

Women experienced the loss of green spaces in the city as not only an aesthetic and recreational problem, but a threat to their livelihoods: many supplement their household's income by raising small livestock, and growing crops in gardens, orchards or allotments. The loss of communal green spaces and space between houses often inhibits these activities in the present day. As this spatial restructuring of the city is driven by large-scale mining activity in the area, and these small-scale agricultural activities are often part of the informal economy, this impact on urban women's lives is easily overlooked, but nevertheless severe.

Furthermore, gendered geographies and experiences of place include places of exclusion and fear (Massey 1994). These were discussed by women in relation to mining in various ways. Several maps, for example, indicate an increase of cars and paved roads. Improved infrastructure is often framed as a positive by-product of large-scale mining for local communities (Bury 2005; Kitula 2006). In Cajamarca, too, mining activity directly led to an increase of paved roads and motorways, sometimes constructed by the company (Bury 2005). Framing this as a straightforward benefit is an oversimplification, however, as

increased traffic can make roads more unsafe (Ward et al. 2011). Women with young children particularly echoed this concern, explaining that due to the increased number of cars, *now* it is impossible to let children to walk outside alone; as previously noted, it is women who carry the responsibility for children's well-being. One of the women raising this was Luisa (45, figure 4), who had recently joined a women's group opposing mining, due to changes she perceived in the city. Luisa chose urban safety as the main change to illustrate on her map, where the *before* features children playing in the street, alongside the words 'without danger' [sin peligro]. Contrast this with her *now*, associating Yanacocha with increased prostitution, robberies, lack of work and security; even hitmen. She explains that, due to accounts of increases in GBV, she is now afraid to go into the street at night, or get into taxis by herself. She said:

[Figure 4 near here]

> We used to go out feeling calm, because nothing ever happened to us. They didn't rob us, they didn't hit us, they didn't kill us, nothing.

Some of these concerns – as well as many of those described before – are also present in Camila's (35) mind-map (figure 5).

[Figure 5 near here]

Camila had been on the forefront of anti-mining campaigns and continued to voice her opposition to mining expansion. In *before*, she highlights various traditional practices, love for the earth, and access to clean water. In 'after' she highlights, amongst other things, a variety of what she describes as 'social ills' she associates with the mine's presence, including

nightclubs and increase in prostitution. These have a physical presence in the urban landscape, serving as reminders of the rapidly changing character of the city.

As discussed previously, both large-scale mining and women's involvement in mining-related social movements are associated with increases in GBV. It is notably the urban space that becomes associated with sites of danger and fear, often associated with the population growth of the city. Many women associated this with masculine-coded figures such as hitmen and robbers, as well as government and industry officials, such as the military, police, and mine workers; whose presences have led to an overall masculinisation of place (Boudewijn 2020; Caretta et al. 2020; Lahiri-Dutt 2020). This results in women's increased exclusion from public spaces, unless in particular forms for men's benefits.

The mapping exercise allowed women themselves to foreground those places, impacts and/or changes that mattered to them most profoundly. In this way, the exercise tells us not just what impacts mining has on women, but how these are experienced individually: which ones are felt most deeply and significantly, and why. The exercise thereby allows exploration of different and complex impacts and experiences of mining temporalities, beyond more well-documented socio-environmental impacts of mining. The women interviewed communicated their gendered daily activities and the landscape as intricately connected; everyday activities, undertaken by people, resulting in particular landscapes appear in their depiction of the *before*, and are disrupted, disappeared or made inaccessible in the *now*, as new designs on landscape are imposed and thereby, a way of life is consigned, both literally and symbolically, to the past. For the women featured here, the contrast in their experience of place –in terms of livelihood, safety, gendered connections and/or responsibilities – is a key impact in itself. They communicate a rupture of place-attachment and the sense of loss of a way of life, that highlights the experience of being 'displaced in place' (Askland 2018). These are visibly represented in the landscape: if the physical environment no longer is as it 'should be', but

represents discontinuities between past and present, it becomes imbued with new meanings and associations. As a result, this disruption is not simply a disruption of everyday life, but also, fundamentally, of the meaning assigned to it. The next section explores this in more detail, highlighting the accounts of the two women who took part in this research project who supported mining projects.

Mapping and Narratives of Place

Connections between people and land play central roles in Cajamarcan anti-mining movements, and while talking to women that had taken part in them, it became clear that being informed of, and communicating about, the changes the mine brings to place and landscape is central to their activism (see Boudewijn [2020]). At the core of what all women are communicating is a sense of power imbalance; it is impossible to control the many changes the mine brings to their lives, and the social forces driving it (Massey 1994). Cohen (1985) argues that situations communities confront in the present lead to particular social constructions of the past, befitting narratives needed in the now. Among the women quoted here, this socially constructed past has become a strong force for framing alternative presents – the present that could have been without the mine. In mapping contrasts, and the narratives this brings out, the past becomes politically reimagined to construct alternative presents and futures. These are portrayed as preferable to the current situation, as they would have entailed a continuation of their own way of life. However, women's narratives of (disrupted) place, landscape, and the associated impacts on gendered responsibilities, safety, and livelihood strategies should not simply be seen as political, necessary and/or reactive constructions of time. As argued above, the mapping exercise tapped into an emotional connection between lived experiences within place and landscape. This goes beyond strategic purposes – and sometimes in direct opposition to them. This was particularly true for Sofia (27) and Natalia

(37), both in favour of mining-expansion in Cajamarca. Sofia had recently finished an internship with a mining company. Her father moved to Cajamarca city with her and her siblings when she was young, to work in the Yanacocha mine. This, she explains, allowed them to access good higher education. Natalia works in a business that caters to high-income mineworkers; the cancellation of the Conga project came as a blow to her industry. Furthermore, her husband works for Yanacocha, and was demoted after the Conga project fell through.

Mining, particularly Yanacocha/Conga, is deeply divisive in Cajamarca. During my fieldwork, I occasionally spoke to people who supported mining, and based on these experiences and conversations, I expected my interviews with Sofia and Natalia to be steered towards the benefits of mining. Indeed, both women began by explaining they consider mining a road towards economic development and decreased poverty, Natalia feeling that activists either misunderstood or were intentionally misguided. Before drawing their respective maps, Sofia highlighted that more people now have cars and larger houses, and Natalia explained the arrival of other international companies (e.g. supermarkets, department stores) evidence that Yanacocha has brought positive progress.

It would seem then, initially, that constructions of the *before* and *now* of women supporting mining activity are very different to those of women who oppose mining. Furthermore, Natalia's account of the Cajamarca city she grew up in stands in contrast with that of some of the women who oppose mining: she explained there was more poverty and less work *before* Yanacocha. This may be due to the fact that, unlike other women I worked with, she grew up during Peru's internal conflict in the 1980s and early 1990s. It may also, again, support the notion that the past is constructed in light of dominant narratives on the present (Cohen 1985).

However, both women began speaking about mining differently after silently drawing their maps. Sofia drew the rural community she grew up in (figure 6). Her *now* shows markers

of increased economic development, that she had positively associated with mining at the start of the interview (e.g. cars, larger houses). However, through the mapping exercise, Sofia went on to communicate a loss of vital connections in the landscape as the things that made it familiar and particular were replaced with generic status symbols. Consider how she uses her understanding of place-continuity in discussions with her boyfriend, who has moved to Cajamarca to work in the mines:

[Figure 6 near here]

I tell [my boyfriend], 'you don't feel it because you don't know, you don't feel this nostalgia when you go to the countryside and see the mountains, how they are deteriorating little by little […] or, there was a lot of water and you go a few years later, and it's not there anymore. [...] because we are from the region, we really know what impacts it generates.

After drawing her map, then, Sofia began invoking notions of the *before* versus the *now* in the context of emotional connection to place and landscape, similar to women who oppose mining. She speaks about the sadness only a local can experience when confronted with the changes the mine has brought to the landscape and its inhabitants. This is felt when contrasting the *before* with the *now* in her map: living things (a farmer, cow) are absent, crops are diseased, the river has shrunk. The notion of understanding place, landscape and their components, then, became central as Sofia explained how knowing the land, and personally feeling the mine's impacts on it, make her more aware of what the mine truly means, i.e., the disruption of a way of life undertaken in place, produced by and producing a particular landscape. This again echoes Rishbeth and Powell's (2013) analysis of belonging and landscape as tied together through accumulated memories, and highlights the extent to which

the rupture experienced is temporal: Sofia's sense of place-attachment is linked to the past, in her lived experience and the connections she explains she feels to her ancestors.

While Natalia (figure 7) also included positive economic markers, such as department stores, in her *now*, she too began to speak in a way far more similar to the women who opposed the mine after she finished drawing her *before*:

[Figure 7 near here]

Natalia: 'For example, there were more rivers, right? … and more green areas, now there aren't many. More cows, fewer houses, because… there were more green areas than houses […] and now everything, everything has changed […] Well, Cajamarca is still redeeming itself, right? Because there are other places, where now… there is nothing, almost nothing like green areas.'

Inge: 'Where, for example?'

Natalia: '[Cerro de] Pasco [a city that has almost disappeared due to mining activity]. That is what they say will happen in Cajamarca also, because they say that… all of this slope, it's gold. So… they are projecting to buy our land, and move us.'

Inge: 'Does that not worry you?'

Natalia: 'This worries me, yes! […] what worries me is the pollution, right? It worries me a lot, the babies get ill. This is… yes, the pollution is foul.'

Similar to Sofia, after drawing her map, Natalia's stories were more reminiscent of those the women who oppose mining would tell me. While Natalia's construction of the *now* remained based in the economic benefits of mining, the mapping exercise allowed her to communicate her intimate knowledge of the place she has lived all her life, lamenting loss of green spaces and cows in the city and the surrounding countryside, indicating she does feel an attachment to a particular way of life and the landscape it creates. Notably, both Sofia and Natalia drew the place they grew up in, perhaps not surprising given emotional connections to home-places, and the centrality of childhood memories in place-attachment and landscape experience (Gustafson 2001; Rishbeth and Powell 2013; Scannell and Gifford 2010). This on-going emotional connection to childhood community may lead to it being perceived as the place most meaningfully affected by the mine's activities. Furthermore, like the women involved in anti-mining movements, Natalia and Sofia have fears about what a future with mining expansion might look like, worrying about pollution and the health of themselves, their families and communities.

While at the start, both women had stuck to arguments common for those who favour mining activity, the direct contrast in place they confronted when mapping a *before* and *now,* shifted their narrative to explore wider impacts of mining. These accounts were rooted in their personal emotional, long-standing connections to place and landscape. This underlines the ways in which the use of innovative mapping methods can indeed draw out not just an enhanced, but a different type of understanding of the participant's life and experiences, that would not have been shared in an interview only. Furthermore, this convergence of narratives by women with vastly different stances on mining also emphasises that the accounts of those opposing the mine are not simply strategic, but born from a similar sense of place-attachment and rupture in place and personal continuity. This affirms Gagnon and Desbiens' (2018) suggestion that mapping exercises focusing on sites important to the

individual are useful for exploring emotional and memorial aspects of place-attachment in changing landscapes. As explored in the previous section, methods like these forward underexplored sides of the gendered impacts and experiences of mining, by shifting emphasis to the context in which they take place; physically and over time, and the meaning-making associated with this. As a result, the rupture in place-attachment becomes communicated as a gendered impact in its own right.

Conclusion

Using an innovative mapping exercise, this article brings women's temporal, place-based experiences of mining in conversation with existing research on the gendered impacts of mining. This mapping exercise allowed women to foreground a particular place they considered most deeply affected and altered, and/or to pinpoint those changes or impacts they consider to have the most profound consequences. Contrasting the *before* with the *now*, many women highlighted far-reaching impacts of mining on their daily lives and gendered responsibilities for health, livelihoods and safety. Thereby, the exercise allows for a critical analysis of how gendered impacts of mining are experienced, and to hear women's individual voices as they explain why these particular impacts matter in the context of their lives. As explored, at times the mapping exercise at times redirected stories: especially in the case of women who support mining investment in Cajamarca. Notably, creating their maps led them to speak of positive connotations of the pre-mining landscape, highlighting the method's potential to forward knowledge I would not have collected by interviewing alone. Alongside their maps, all women quoted in this article articulated the connections between landscape, people and place; highlighting that even as their opinions on the desirability of mining activity differed, they shared an understanding the mine as a temporal disruption of place.

The construction of the landscape comes forward through the combined effort of the making of the map itself and the stories the participants tell about them. The exercise tapped into memories of local connections – such as ways of life *before*, and the way these shaped landscapes, and the contrast with the *now* where landscapes are altered as lives have changed. This article thereby contributes to academic debates on extractivism, highlighting an expanded analysis of gendered impacts and experiences of mining temporalities, contextualised in place. These are represented in the maps in alterations to physical and social landscapes, as well as in the dissonance that comes to imbue women's imaginings of past, present and continuity. As disturbance of place-attachment comes with invisible and taken for granted aspects of everyday life getting lost, the threat implicit in the stories told alongside the maps is that women will not only lose their ability to continue living as they always have, but ultimately lose their sense of connection to and belonging in place due to mining activity in their area. These disruptions have far-reaching impact on women's lives, safety and livelihoods, as they break long standing processes of meaning-giving and continuity in both rural and urban environments. This means women's conceptualisation of time and place are important aspects to consider in analysing mining's disruptive influence on women's lives, everyday gendered realities, and the physical and emotional landscapes in which they occur. As a result, I argue ruptures in place-attachment themselves must be considered a far-reaching gendered impact of mining.

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Declaration of Interest

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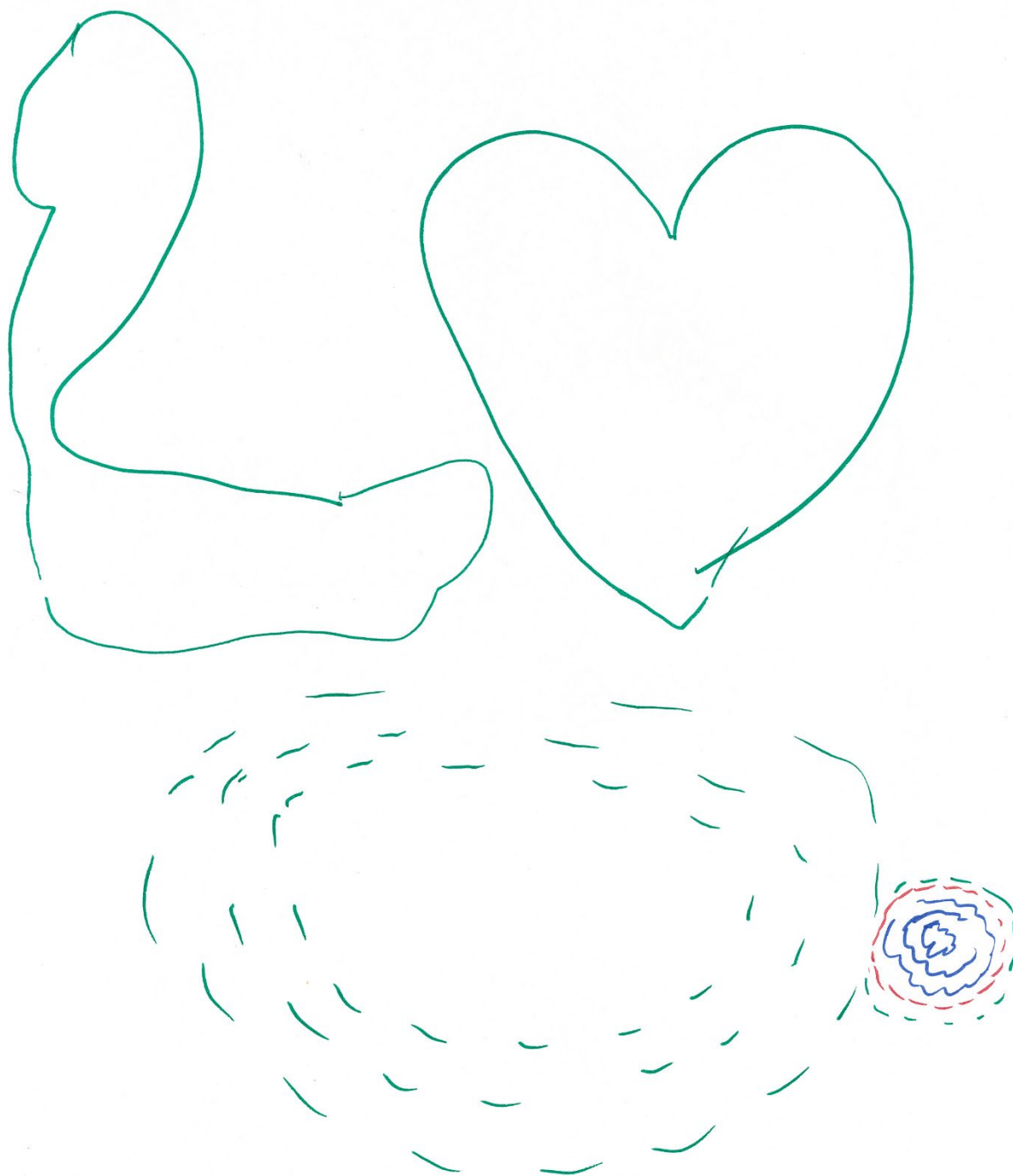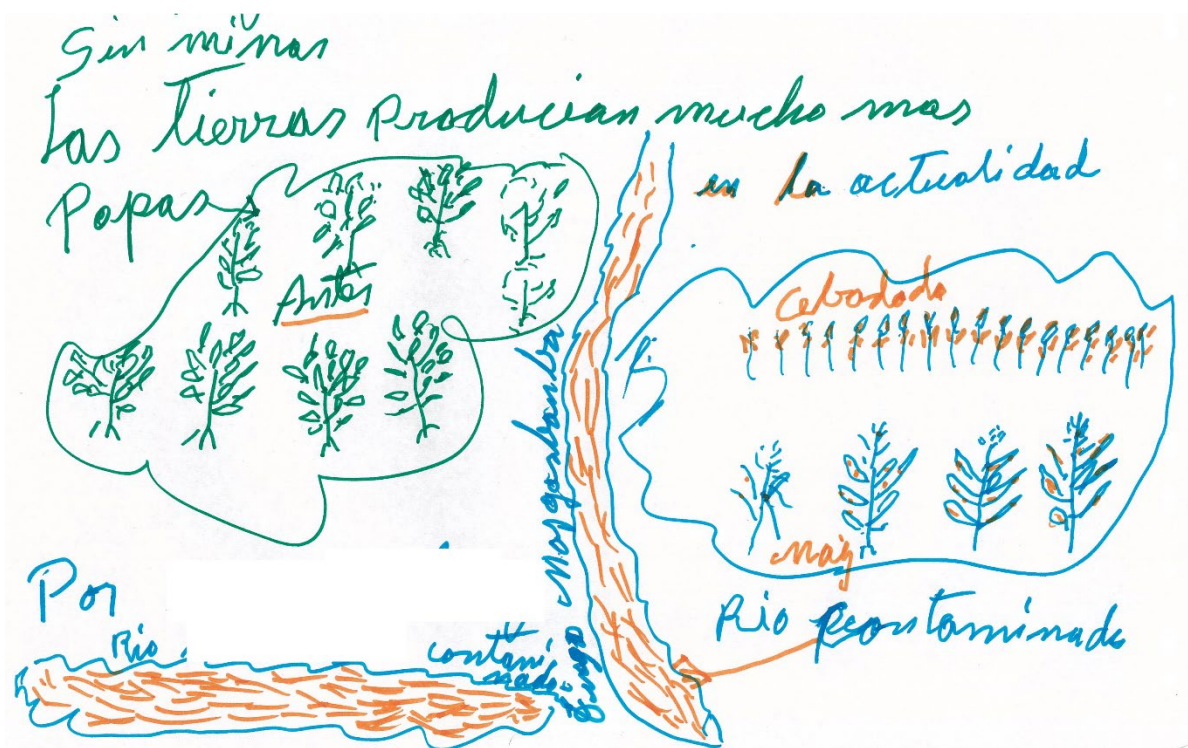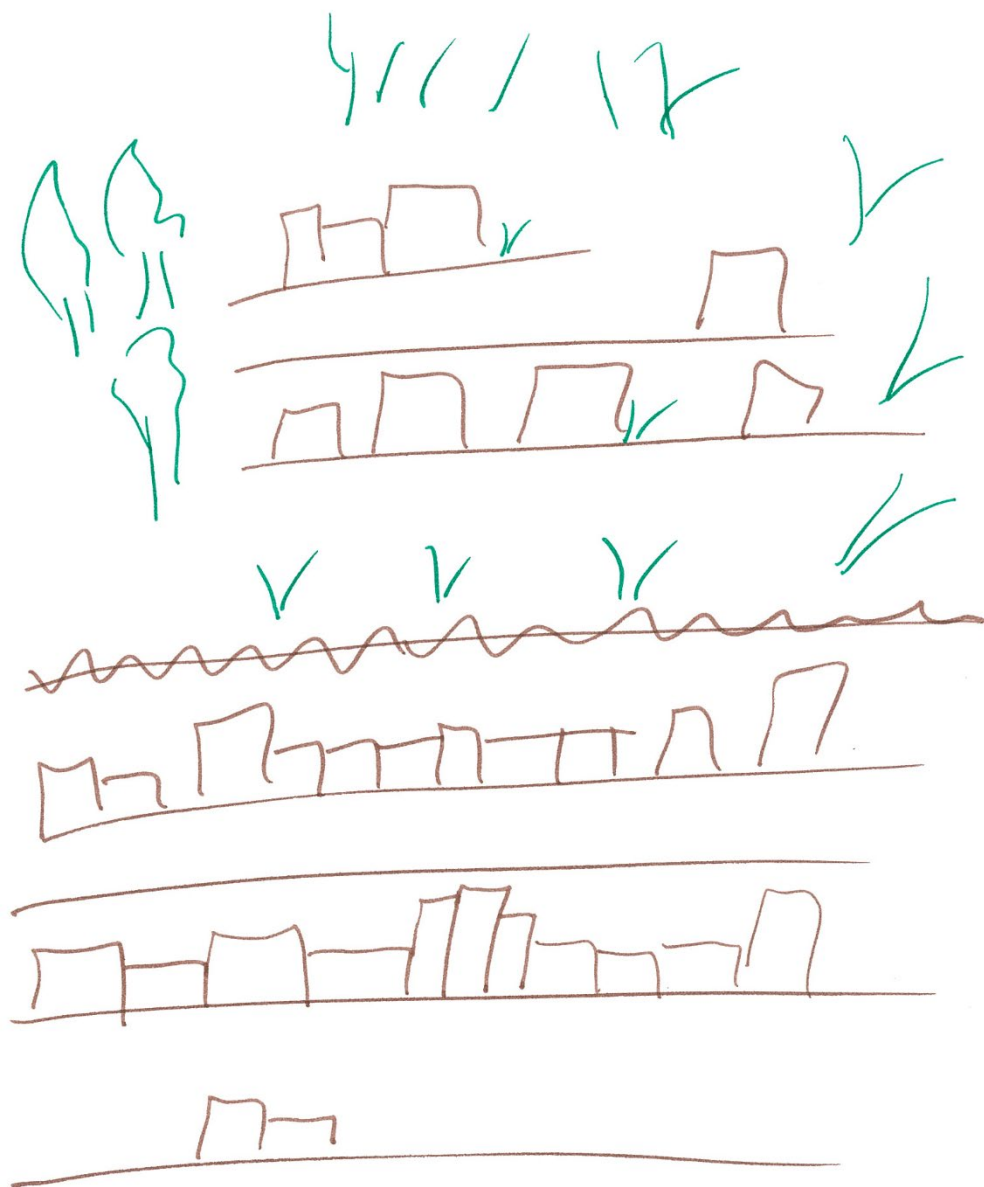
Figures

Figure 1

Figure 2

Figure 3

CAJAMARCA CIUDAD. ANTES.

SIN PELIGRO

CAJAMARCA HOY   RURALES
AGUA NO HAY

ESCASES DE   CIUDAD
ALIMENTOS   TAMBIEN NO
POR FALTA   HAY AGUA.
DE AGUA

CONSECUENSIA :.PROSTITUCIÓN.
DE TENER A   .ROBOS.
YANACOCHA
                    . FALTA DE TRABAJO
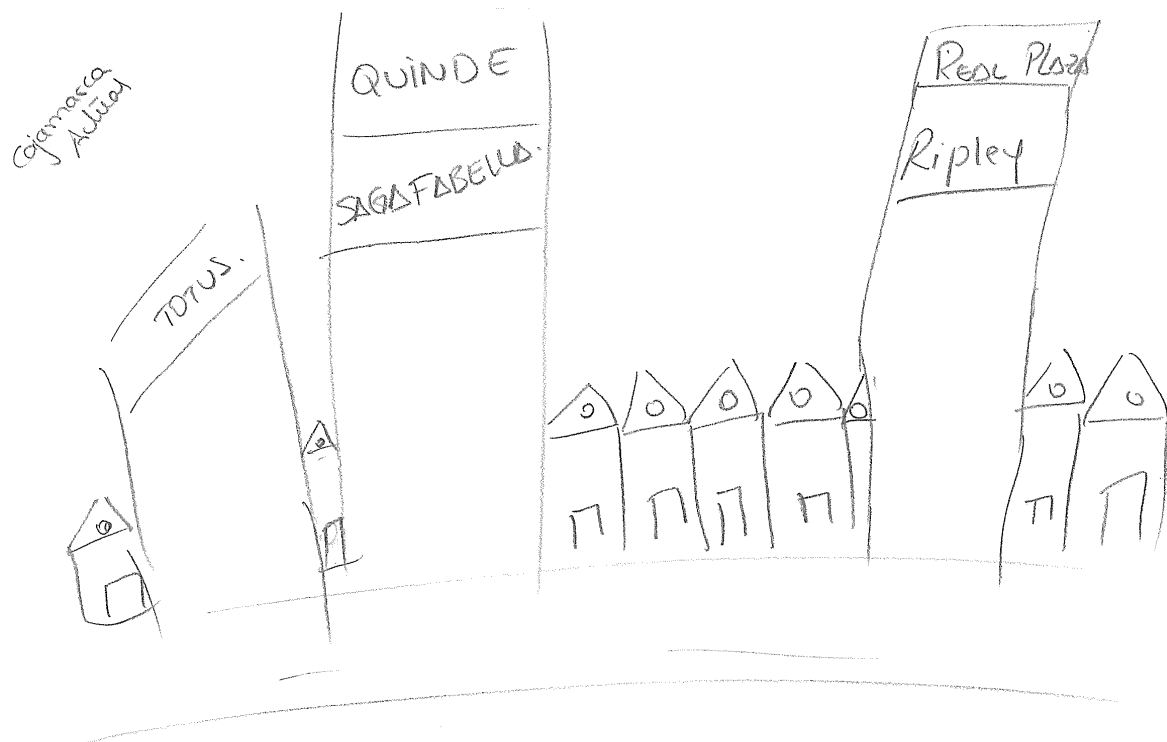   . INSEGURIDAD DE
                    CIUDADOS: SICARIOS

Figure 4

Figure 5

Figure 6

Figure 7

Figure Captions

Figure 1: Laura's map. Top, **before**: Lakes Pato [duck] and Corazon [heart]. Bottom, **now**: mining pit and polluted water.

Figure 2: Beatriz's map. Top left, **before**: green crops. Written: "Without mines – the land produced a lot more". Right/bottom left, **now:** blue and orange barley and corn. Orange contaminated rivers. [Redacted from picture to ensure anonymity: Beatriz's real name, names of the community and rivers.]

Figure 3: Ana's map. Top, **before**: green space between/around houses. Below, **now**: more houses, close together, no green spaces.

Figure 4: Luisa's map. Top, **before:** written: "Cajamarca city before, without danger". A house, children playing. Below, **now**: Rural areas: "no water, lack of food due to lack of water." Urban area: "Consequences of having Yanacocha: city also does not have water; prostitution; robberies; lack of work; insecurity of citizens: hitmen."

Figure 5: Camila's map. Central: 'ciudad', city. Above: después (after/'**now'**): supermarkets, decreased water quality, less interest in local culture, especially among young people, less interest in mother earth in favour of money, less sense of unity, disappearing communities, nightclubs, social contamination, prostitution, begging, corruption, high cost of living, construction of [large] buildings, disappearance of archaeological remains. Below: antes (**before**), marketplace for local people, houses in traditional material (adobe), more social awareness, cost of living [lower], love for the earth, unity in community, archaeological remains considered important, [more] Rondas Campesinas, mingas [line indicating this goes in 'before'].

Figure 6: Sofia's map. Left, **before**: Sofia's childhood community. One house, a river, green mountains. Right, **now**: no agriculture; some orange grass. Brown mountains, smaller river. More/larger houses, roads, a car.

Figure 7: Natalia's map. Top, **now**: houses bordering each other, shopping malls, department stores, supermarkets. Below, **before**: space between houses; cows, plants, trees.