Dwelling in a pollution landscape

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Abstract

Industrialisation and post-industrialisation in the post-Fordist era have led to the production of landscapes characterised by the transgression of industrial systems, including, for example, large wastelands and abandoned brownfields. These landscapes are 'pollution landscapes' in the sense that they are not simply landscapes containing pollution, but rather, they are landscapes in which the pollution is an active component producing a collective experience of nature and place (Castán Broto et al, 2007).

Research on experiences and responses of people coping with pollution in their doorstep have used Goffman's work on stigma to explain how pollution may be "normalised" in everyday life- thus vanishing in the landscape- and how pollution can be re- exemptionalised through environmental activism and discourses of environmental justice. This paper advocates Ingold's notion of dwelling to understand the co-construction of pollution landscapes through a myriad of collective social, economic, political and ecological process in which the agency of the landscape affects its collective experience and it is re-shaped by it. In particular, I am interested in the extent to which people's experiences of a landscape influence the way they intervene in local processes of environmental governance. The paper will revisit the example of coal ash disposal in a pollution landscape in Tuzla, Bosnia and Herzegovina, to explore the practices of dwelling that produce and re-produce normality and anomaly in a pollution landscape.

Introduction

Georges Seurat completed his monumental picture 'Bathers at Asnières' (1884) before his great breakthrough, the invention of pointillism (Figure 1). Yet, who could argue that this is not a masterpiece! The picture draws you in immediately but simultaneously relaxes you with its pastel colours. Not only 'Bathers at Asnières' presents a beautiful view of the River Seine as it flows through the Parisian suburbs of the late XIX Century, but also it provides rich insights about working class life at that time and place.

In the picture we see a group of working class men enjoying a rare moment of leisure on the banks of the river Seine. The central figure of the painting is the sombre figure of a young man of large stature, sitting on his own clothes, eyes- presumably- lost in his thoughts. In front if him, a boy with a red hat actively enjoys the water. Behind him, there is a row of lazy figures lying on the grass, with working class attire. Viewers do not see their anonymous faces but can enjoy the expressivity of their body language. In the background, behind a dividing line of small boats and poplars, the silhouettes of industrial buildings and the smoke coming out of their chimneys dominate the scene in the same way a dark shadow over the window may change the mood of a relaxed scene. The

detail of the landscape and its effect on the observer's mood has a similar impact to that of the Dutch Masterpieces of the XVII century, in which background details shape the overall intent of the painting (think, for example, of Cuyp's 'River landscape with riders', for example). Here, however, these details have an altogether different significance.

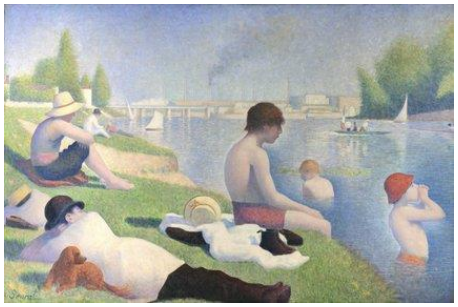

Figure 1: Georges Seurat 'Bathers at Asnières' (permission for reproduction is currently being sought from the National Gallery in London)

In this painting, Seurat, magisterially, portrays a pollution landscape- a landscape in which human experiences are mediated by the very transformation of that landscape in a new and unique way. Landscapes themselves are the products of socio-nature interactions: they are neither visual representations for the exclusive enjoyment of human eyes, nor are they the mere result of ecological processes. But, pollution landscapes emerge in a period in which the dynamics of socio-nature interactions and their impacts on landscape have changed in dramatic way. At Asnières, Seurat's bathers are enjoying their time. The painting is, on one hand, a chant to the achievements of the working class within the process of industrialisation, a proto-image of workers as potential consumers who enjoy their leisure time. On the other hand, the painting also provides a certain insight about the environmental costs of economic achievement. It stands in stark contrast with the romantic representations of landscapes that preceded the impressionist and post-impressionist period. For horizon, we have a line of factories. For clouds, dark smoke. And for water, a darkened mirror. Looking at the painting I wonder whether Georges Seurat expected viewers to imagine the smells and the heaviness of the hot air within the picture. What did the water in the Seine taste like?

In this painting Seurat's both celebrates the achievements of the industrial revolution and explains how it unfolds over the landscape. In doing so, Seurat's painting captures the social relationships within a pollution landscape and their dwelling experiences . Dwelling refers to the intimate relationship that develops between a landscape and the people who inhabit that landscape during their life course (Ingold, 2000; Thomas, 1993). Dwelling implies a lack of distance between people and things; in places of dwelling humans engage with the landscape through daily practices rather than by detached visual contemplation (Ingold, 2000; Macnaghten and Urry, 1998; Thomas, 1993). Those relationships and the landscapes they generate are in constant evolution, but certain characteristics may solidify structuring the lives of those who live in that landscape. Pollution is one of them. Environmental pollution is a key issue that, once it emerges in a landscape its inhabitants find it very difficult to explain it away. As 'pollution landscapes' these are not simply landscapes containing pollution, but rather, these are landscapes in which the pollution is an active component producing a collective experience of nature and place (Castán Broto et al., 2007). What Seurat's painting captures is not simply that pollution may influence the experience of the landscape- and how workers spend their leisure time- but rather, that there is an intimate relationship between the

features of a pollution landscape and the ways people living in that landscape think about themselves and act accordingly.

Industrialisation was legitimated on the back of dreams of modernity and progress, with a landscape of "smokestacks that dramatically appeared on the horizon" (following Ferguson, 1999) that symbolised the rise of the middle classes. However, especially with the application of structural adjustment policies in distant corners of the world ever since the 1970s, many of these areas whose landscapes changed under the dreams of industrialisation have now gone a painful process of de-industrialisation and economic decline. As Ferguson (1999: p.12) explains "the circumstances of economic decline have affected not only national income figures and infant mortality rates but also urban cultural forms, modes of social interaction, configurations of identity and solidarity, and even the very meanings people are able to give to their own lives and fortunes". Economic decline does not only permeate the lives of those living through it, but also, is imprinted in the landscape itself. As Seurat's painting aptly describes, landscape production was qualitatively different under industrialisation. There were new elements in the landscape, full of purpose. The extent to which industrial development was perceived as a transgression was related to the future promises that the chimneys provide for those living under their shadow. Post-industrial landscapes, however, are characterised by the lack of purpose in the transgression of industrial systems, as it is evident in large wastelands and abandoned brownfields. Such lack of purpose is related to the very same 'sense of decline and despair' that Ferguson found in the lives of those who struggled to live in the Zambian copper belt in the late 1980s.

What are the future possibilities for those dwelling in a post-industrial pollution landscape? Can they actively promote actions and visions that revalue their locale and enable them to hold the promise of a future life in that pollution landscape? In this paper, I relate everyday life in a post-industrial pollution landscape with the capacity of its inhabitants to promote and achieve political action. In doing so, I use the concept of dwelling to look at how inhabitants in a pollution landscape portray themselves. This helps to characterise social relationships within a pollution landscape and, in particular, what are its political consequences in a given planning context. The argument is developed by reassessing a case of coal ash pollution in Bosnia and Herzegovina and with reference to my previous work on this case.

From stigma to dwelling: reinterpreting the pollution landscape

How people frame pollution helps understanding the reactions to a pollution landscape of those who inhabit it. People's understandings and experiences of pollution are mediated by the context in which emerge (Parkhill et al., 2010). Take for example McGee's (1999) work on local responses to contamination from lead mining in the community of Broken Hill, Australia, between 1992 and 1996. In Broken Hill she found an apparent lack of response to local pollution. The issue was only recalled when it gained widespread public attention, and, even then, public discussion diminished with time. Gaining recognition is a difficult step for a pollution problem. The classical work on the Love Canal disaster by Edelstein (2004) emphasised that the identification of pollution is not a trivial thing, whether this is because of the amorphous and invisible nature of chemical exposure; the difficulties in diagnosing its presence and consequences; the reassurances (if present) by industry or local authorities about the safety of the area affected; or personal circumstances, such as the pride of ownership of a contaminated land parcel (Capek, 1993). However local knowledge about pollution

cannot be underestimated. Irwin identifies several types of local knowledges that may contribute to the construction of an environmental pollution claim from direct observations of spatial transformations, health impacts or even systematic data collection (Irwin, 1995).

In the Broken Hill study after identifying the local condition and the hazards associated with it, the community took little proactive action against it. Most of the responses were taken privately and activism was reduced to collaborations in lead exposure management. McGee attributed this to the dependence from the polluter and disagreements between families. She described the proliferation of individual coping strategies as emerging from a form of 'frontier individualism' that was closely related to the attribution of stigma to other families. Stigma is not only attributed to those living in a particular place but to the place itself (Castán Broto et al., 2010; Parkhill et al., 2013).

This kind of analysis has been useful to understand how local residents make sense and explain their lives and roles within a pollution landscape. Yet, by focusing on the perceptions of the place and, in particular, how such perceptions are skewed towards a particular negative understanding of the place (and the social construction of a stigma) such analyses overlook that people actually live in those landscapes and, to do so, they may be compelled to suspend those concerns with which they cannot actually deal (Burningham and Thrush, 2004). The question is whether a pollution landscape emphasises transformation- and thus, the capacity of residents to deal with such transformation- or threat (Parkhill et al., 2013). As McGee (1999) showed in her study, the creation and reproduction of stigma through pollution accounts led to the division of the community and the adoption of individual strategies to cope with the pollution. This co-opted possibilities for community action.

These considerations are particularly important in post industrial pollution landscapes and declining economies because of the difficulties to find a responsible party for the pollution and, even when responsibilities are established, to ensure that such responsible party can find means for compensation of affected residents (Castán Broto, 2012). Cases like the Love Canal example (Edelstein, 2004) show that residents are able to organise themselves towards a common goal to actively denounce a pollution attempt and demand compensation (Aronoff and Gunter, 1992; Capek, 1992). On the basis of redistribution of goods or direct compensation for environmental consequences community action can be mobilised around ideas of environmental justice. Of course, compensation is not enough to address the issues claimed by activist. Recognition of the damage done and representation in decision-making processes are often equally important (e.g. Agyeman, 2005). Yet, the prospect of compensation that follows recognition is most often away to galvanise the community into any form of organised action.

So, what happens when that prospect for compensation does not exist, not only because of the difficulties to identify a single agent behind the health and environmental degradation of a pollution landscape but also because any potential actor towards whom claims are directed lacks the capacity or resources to actually compensate residents and other citizens suffering the pollution? How can community action be brought about in that context?

In this paper I argue that in order to move towards organised community action for a sustainable future, discourses of environmental transformation and social change in a pollution landscape need to move away from narratives that emphasise the prevalence of stigma and the attribution of responsibilities for the production of that landscape. Instead, I would like to look instead to how local residents dwell in such landscape, and how dwelling practices relate to their capacity to

represent their own concerns and their ability to bring about action in consequence with such representations.

The notion of dwelling (from the Latin Habitare), connects life with the space of living. Heidegger (1971) described dwelling as a fundamental practice of "being-in-the-world", through which humans are able to make ourselves 'at home'. This relates dwelling not just to utilitarian aspects of having shelter and livelihoods - but also to the practices, experiences and conceptions in space which mediate the creation of space itself. Ingold (2005; p. 503) has advocated a dwelling perspective that emphasises that although, "we may imagine ourselves to be living on one side of a boundary between society and nature, and non-humans to be living on the other […] such imagining is only possible for a being that is already situated in an environment of human and non-human others, and committed to the relationships thus entailed". Dwelling is however not the same as experiencing or interpreting the world, as it is specifically directed at the material life practices that lead to the making of the landscape. Through dwelling, pollution landscapes are further transformed and incorporated in life practices, so that new forms of owning landscapes emerge- forms that are sensitive to the threats of pollution and yet, remain wedded to future communities.

Landscapes of post-industrial transformation in Tuzla

In the late 1960s, the siting the new thermal-power plant in the growing and prosperous city of Tuzla must have been an obvious choice. It fitted the economic strategy of those decades in the Former Socialist Republic of Yugoslavia, in which republics were differentiated according to their perceived competitive advantage. In such economic map the then Socialist Republic of Bosnia and Herzegovina was to be a site for mineral extraction and heavy industry. Thus, alongside the old historic administrative capitals - Travnic, Sarajevo - emerged the new industrial capitals like Zenica and Tuzla. Coal was the key resource that constituted the basis of industrial production in the Republic.

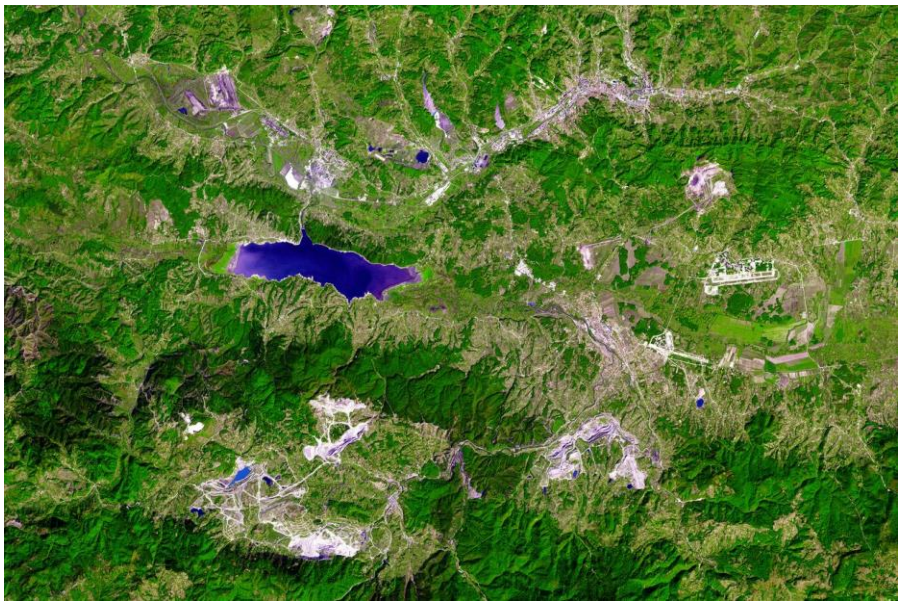

Figure 2: Satellite image of Tuzla and surrounding areas

These choices have shaped the spatial development of Tuzla and its satellite towns (Figure 2). The coalmine history starts in the mining satellite towns, such as Banovici, where one of the last mines remains today. In interpreting the satellite image in Figure 2 Smailbegovic and Lindsey (2009) explain:

> "*Several large mines and their associated debris (tailings) are scattered across the image. Four large open pit mines appear in a clockwise arrangement starting southeast of Tuzla: Dubrave, Djurdjevik, Mrdici, and Banovici, all of which produce brown coal. At the upper left corner of the image is the Kreka strip mine, which produces lignite. East of the inactive Ontario Strip Mine, lavender-colored patches are fly-ash deposits—the residue left over from coal burning at the Tuzla power plant.*
>
> *The transition from underground mines to more profitable large-scale surface mines has led to soil degradation, dramatic changes to terrain, and water and air pollution. Scientists at the University of Tuzla have estimated that open pit mining has degraded at least 20,000 hectares (about 50,000 acres) of land in the country, with the majority of the damage occurring in the Tuzla Basin. Remediating some of the worst pollution hotspots in the Tuzla Basin is part of a new agreement among cities and local industry to make industrial activities in the area more environmentally sustainable*."
> (http://earthobservatory.nasa.gov/IOTD/view.php?id=38337)

Abundance of coal made it easier to take the decision to establish the thermal power plant in the entrance of Tuzla, which overtime grew to become one of the greatest sources of energy in the country. A dam in the near town of Lucavak also provided abundant water needed to manage the cooling process, clean the plant and dispose of large amounts of coal ash. Many other industries established themselves around the plant, attracted, among other factors, by the availability of energy. These were prosperous times for Tuzla. In between the late 1950s and the mid 1980s the growth of industries was coupled with exponential growth of working populations. Migrants came everyday to the city from every corner in Yugoslavia, adding to the already diverse mix of population. In 1971, the headcount in the Socialist Federal Republic of Yugoslavia population census was 107,293. The 1991, the Yugoslav census reported 24,325 people more, an increase of 23% in over 20 years. The census also reported an increase of people who reported themselves as 'Yugoslavs', that is, people who declined to ascribe themselves to a single ethnic minority, from 2.36% in 1971 to 16.71% in 1991.

In the 1980s the first signs of economic decline emerged. Economic adjustments affected the city and its industries. The impact of industrialisation on the local resources became evident suddenly and local residents organised themselves and staged protests against the rampant pollution. In the villages surrounding the power plant residents had seen for decades how the disposal of large amounts of coal ash was transforming their landscapes as they knew them. Large amounts of forests had disappeared, first during the excavation of coal and later, under giant dams, which contained a mixture of ashes, coal waste and water.

This giant ash dams- that today occupy more than 150 Has- constitute an additional environmental hazard. As ashes sediment, the finest particles of fly ash are suspended in the water, and eventually deposited in the most superficial layers of the ash deposits. In Tuzla, the combination of strong winds with the hot and dry weather during the summer caused storms of black ash during which the ashes short of covered everything in a layer of black dust. Residents organised themselves to

demand action against this from the power plant, and in the late 1980s the plant implemented the first actions towards covering and re-vegetating the oldest coal ash disposal site in the village of Dreznik. Soil scientists and engineers from the universities of Tuzla and Sarajevo studied the old sites and developed strategies for their long-term regeneration.

In 1991 the Bosnian conflict erupted. The city was in shock, not only because of the dismembering of the socialist regime in Yugoslavia and the raising of nationalism, which led to the Serbian aggression in Bosnia and Herzegovina, but also because of the distinct anti-nationalist politics of the city of Tuzla. Tuzla was the only city in Bosnia were nationalist parties had not won in the municipal elections- and the city remains averse to nationalism to this day. The siege of the city by the nationalist Serbian forces during the war did not stop its residents from going about their lives, trying to live through the most abnormal situations: 'On the day of our marriage, as we walked out of the registry office, the shelling started', was the observation of a friend who lived in the city through these years. He spoke about it without a hint of sadness in his story.

The power plant was a key strategic objective and one that the people of Tuzla fought to maintain during the war. The plant was kept open, by operatives who risked their lives each morning by walking the short distance between the city and the plant. The road that communicated the city with the main industrial park around the power plant was exposed to shelling attacks. Not all the industries survived. After the war many people found themselves jobless. The power plant itself halved its own work force with under 1000 workers in the late 1990s. Moreover, being Tuzla a self-declared non-nationalist heaven but situated near the front line, it received a high influx of war refugees, who where hosted and hidden by local populations but who, in the late 1990s found themselves with little prospects for economic prosperity in Tuzla.

When I started my research in Tuzla in 2005, under the premise of understanding residents' concerns about the power plant and their environment to adapt potential solutions for land regeneration to local demands, I found a general climate of desperation and discontent. Residents were fearful, on the one hand, of the damaging consequences of pollution in their landscape. Many had followed training with international NGOs concerned with the environment who have warned them about the detrimental impacts of pollution on the environment but had left them without appropriate tools to operate within a fragmented governance landscape. Claims to the need to recognise the environmental damage on the landscape were met with anxiety by industries which were themselves struggling in the new economic climate of globalisation. The social responsibility that local companies had previously demonstrated under the system of self-management was now regarded as an obstacle to achieve competitiveness and profits for companies to survive. And for those who didn't 'ditch' those aspirations to serve both the economy and the society, they found themselves at the mercy of international investors, who, in one report bought what once had been prosperous companies for as little as one dollar. International investments also brought new aspirations symbolised in the new expensive supermarkets (Merkator) which joined the former Socialist Republics economically but not socially.

This is the context in which environmental justice demands- articulating the clean environment as 'a human right'- have emerged in Tuzla. But simultaneously this is a context in which people have continued going about their lives independently of the claim-making activities in their particular locale. Dwelling in the pollution landscape, local residents have been able to reinvent what that

landscape signifies in their lives. The following sections explore some of the aspects of dwelling through a re-consideration of previous analyses of the case (Castán Broto, 2012; Castán Broto, 2013; Castán Broto et al., 2010; Castán Broto et al., 2007).

Post-industrial life in a pollution landscape

Most people interviewed in the communities around the disposal sites in Tuzla were seriously concerned about the health and ecological impacts of environmental pollution. Environmental problems were perceived as an interrelated complex, where sources of pollution and effects are hardly separated. Local residents talked simultaneously of the dust pollution from the disposal sites, air pollution, water contamination from the mining activities, subsidence and other environmental problems that interact in the pollution landscape.

Most residents argued that pollution was not due to one single industry- the power plant- but rather, pollution was the result of a long history of industrial activity in the area. "*the power plant is not the only polluter here,*" said in different ways workers at the power plant, local residents and a municipal representative. A local representative of the activist group 'eco-green' (eko-zeleni) stated that they had identified up to 28 "main polluters" including the company "2nd of October" (which makes tar/asphalt), HAK (which is a chemical factory that closed during the war and in the mid-2000s received foreigner capital) and ANGROSIROVINA (a company that makes agricultural products). The mines are also cited as a source of pollution (particularly regarding problems with underground waters) even though their activity has slowed down heavily in recent years.

While, because of its size, history and prominence, the power plant could be considered the main polluter, it also has had a key role in the area both as a source of employment and to support further industrial development. One of the key factors that changed dramatically after the war was that employment became suddenly scarce. In their interviews, people asserted that "*you live to work*" and that "*without companies there is no life*". When asked what is the main problem in their communities interviewees immediately highlight employment, whereas when asked about the future of the communities they immediately see little future because of lack of employment. Working is also regarded as a means for participation in the economy and the growth of different companies. In this way, unemployment competes with pollution as one of the main problems of the community after the closing of several local industries (the soda plant, the chemical plant HAK, some of the mining pits) and the modernisation of others, such as the power plant. Residents also showed their concerns about the employment prospects for the youth and their opportunities for living and recreation in those communities. They see little future prospects other than migrating and leaving impoverished and elderly communities behind.

Residents explain their difficulties to manage the household finances; in particular many people has problems to pay their water and electricity bills. This problem was aggravated in the early 2000s because bills that were not paid during the chaos in the war were then charged retroactively. For old people *"[the payments of] retirements are very small compared with the price of the medication [and] medical examinations*". Those who receive social security payments say that these have been reduced after the war in comparison with the increases in prices: the change of regime and monetary unit has reduced individual incomes.

In this context people rely on the black market to provide additional sources of income. The black market flourished during the war and interviewees argued that some individuals took advantage of

the chaotic situation to become millionaires. Nowadays black market activities supplement the income of unemployed people and a commonly expressed though is "*You have to cheat to manage*". These activities include selling 2nd hand clothes from charity organisations; charcoal trading; timber extraction from coppices; sale of home garden products; poaching. Residents attempt to avoid activities that they consider undignified such as digging garbage or going to the "soup kitchen". Yet, many residents explained that they have actually survived thanks to the aid sent by other members of their family living in foreign countries. While some people talked about emigration as the only possibility for the future of the community, more pessimistic interviewees asserted that they knew from their family that the situation in other countries was not much better than that in Bosnia.

There is a constant worry about infrastructure. People complain about the lack of "everything". Overall the view is that services are available, but they are not affordable. Moreover, the state of the infrastructure is in general poor. The communities are widely spread and fragmented and subsidence problems limit their distribution as well as leave isolated some of the communities. Up to 2009 there were frequent cuts in the electricity and water supplies. Access to services has hardened, and interviewees now complaint about their difficulties to visit the local doctor based in a clinic a few kilometres away. The garbage collection system is quite poor and too expensive; as a result garbage is dumped everywhere. Even people living close to the disposal sites throw their garbage on them and some claim they have seen trucks illegally bringing garbage from other places.

The sewage system is also very poor and some houses, particularly those which are considered illegal because they were build or reformed during the 1990s and did not followed existing legislation. Individuals have solved this issue by putting in place their own septic tanks. These tanks, however, are poorly maintained and frequently overflowed with water, which causes conflicts among the community. For instance, in Dreznik, locals were worried about the consumption from a local well because of its proximity to a septic tank. The presence of community waste waters interacts with the discharges from the industry, which result in a common perception that "*there is waste water everywhere*". Overall, pollution adds to a catalogue of life challenges that emerged after the war, but that have only increased in the decade following it.

Market capitalism has led to a massive shift in understanding how to manage the local economy, which has not been easily translated into the experiences of citizens, particularly those citizens who have found themselves unemployed and with little prospects for joining the new labour market. The war brought about to a lost decade, during which there was little renovation of mostly outdated infrastructures and industries fled the area. Lack of employment and lack of infrastructure have been met by a profound shift of cultural, administrative and political institutions and local residents are continuously faced with demands to adapt. Such adaptations are developed in everyday strategies which try to scrap a livelihood out of the landscape transformations. One such strategy has been cultivating the coal ash disposal sites.

Appropriating the pollution landscape through wasteland cultivation

There are different ways in which local residents have appropriated the pollution landscape through their dwelling practices. Perhaps the most salient is the initiative of local residents to cultivate the sites. Local people from Sicki Brod recall as a victory forcing the power plant to cover the disposal site [Plane] in 1987/88 to protect them from the dust. Following this in 1991 Drežnik was also covered. Once the disposal sites were covered with soil, some local residents looked at them as a new resource:

> Ramiz[1]: "*Right before the war we asked about…that space down there. And we addressed the director of the power plant through our local community with the request … to give us some areas to use for cultivation during the war. And the director's decision at the time was to mark out plots of about 800 to 1,000 square metres...*"

Actual attempts to cultivate the sites emerged during the war, when hardship and the increased population (due to the in flight of refugees) led to the use of every bit of land to provide for the immediate needs for food in the besieged city. These initial experiments resulted in excellent harvests. Thus, when the war finished, cultivation continued. Land was allocated to those who had claims to the area because of their land had been covered by the ashes. Local residents reported that the distribution of land was made within the local communities, giving priority to some groups such as the power plant workers. During the war (from 1991 to 1995), those farming the disposal sites had to give a part of the produce to the army. Some people explain that they also had to pay the power plant:

> Hamid: "*Who wanted [to farm], they paid for it… the power plant took that money for them. They gave you a parcel... To farm it. And it was like that before… 5 or 6 years back* [before the 2000s]*, whoever took that still cultivates it now but nobody is paying anymore...*"

Thus, after the war, those who were already farming continued doing it without any control, although most interviewees point that the actual number of people cultivating the land has dropped, due to doubts about its security and the departure of refugees. By the mid-2000s a group of local 'coal ash farmers' had organised themselves into a producers' association. Some farmed as an additional activity, having small home gardens or small flocks of goats that roamed around on the sites. But others- especially those promoting the farmers association- sought to increase the scale of the exploitation.

Figure 3: the ploughing of the sites previously covered with soil uncovers ashes

Cultivating the sites is an opportunistic strategy, one that makes the most from the environmental transformation of the coal ashes. After disposal, the sites opened up large extensions of flat land, which, covered with the right type of soil, may be rich in nutrients, depending on the composition of

[1] All the names are pseudonyms

the ash. Moreover, the ashes are able to absorb water, providing a water reservoir for crops during the dry summer season. When asked about the quality of the agricultural produce in the disposal site Dreznik a local resident said:

> *Alija: " Oooooh! It has showed it in the last ten years, it put to envy our famous* [fertile] *planes, Samberija and Posavina. You just need enough fertiliser following the regulations of experts. (…) And add that it is very easy to cultivate, the ground is light"*

Other interviewees, however, highlighted that the results are erratic, "like a lottery". The yield is highly dependent on the weather conditions. One key limiting factor is the distribution of rain: although the ashes retain more water than conventional soils in the area, during the dry season they also absorb more water and thus, if there is not an existing reservoir the ash soil may need more water than the conventional one in a drought. Indeed, some interviewees explained that they discontinued cultivation in 1998, three years after the end of the war, because of severe droughts in the area. Hence, the newly formed farmers association is putting emphasis on creating an irrigation system for the sites.

For those unemployed, cultivating the disposal site means having a lifeline occupation, from cultivating vegetables to keeping sheep. The lack of opportunities and the transformation of the economic landscape have led to emphasis on cultivation:

> Milos: " *… people have their own experiences. A lot of them said that they won't sow anymore, and again, every year, they sow. Because they don't have any other place to do that.*"

Worries about the safety of these crops are, however, widespread, and have surely had an effect in the decreasing number of people farming in the sites during the last years and the abandonment of some of the allotments which were sowed before. An interviewee in Bukinje says:

> Mirza: " Something can be cultivated there... But what grows there, if we're talking about fruit and vegetables, I wouldn't give it to my cattle to eat, let alone human beings"

To make such strategies of landscape appropriation effective, however, requires the adoption of a particular identity and their consequent ability to invoke a particular kind of knowledge, which can be included within the policy process. Presenting oneself as a powerless individual provides the ground for deferring responsibility for action to other actors. Those who cultivate the sites are aware of the risks that cultivating the sites could potentially pose, particularly through the migration of heavy metals and sulphates to the food chain. Take for example the case of Alija, one of the farmers in the site Dreznik who is promoting cultivation of the sites. When prompted, he explained that he was not concerned about the pollution, but rather, about the lack of expert advice on that pollution:

> Alija: "*Let me tell you I'm not competent and I shouldn't make any claims about it, but we only hope that what we sow hasn't been forbidden by anyone and that's the reason why we think there is no pollution. But do we have anything in writing? We don't. I guarantee you that we don't have anything in writing.*"
>
> (…)
>
> "*We don't have a report about the well. (…) I don't know if even then anyone analysed the water, that well. However, people talk over coffee, they say: 'Yes someone analysed the*

water' but they don't know who or when and there is no report; to this very day there have been no reports but we only talk over coffee: ' Someone analysed it' But, is there a report? No."

Translator: "*So what is your concern about the water?* (…)"

Alija: "*We are concerned that there are no results from experts*."

(He continues explaining how cultivation could help them to make a living from the disposal sites and concludes:)

Alija: "*If only the experts would give us regulations!*"

This extract provides an insight into how Alija copes with pollution as a justification for him cultivating the sites and using the water from wells, which could potentially be creating a health hazard within the community. To legitimise his position he explains that farmers assume the land is safe because no expert has told them that it is not; this is what 'they', 'ordinary citizens' fear, but they do not have 'anything in writing' to prove that the disposal sites actually do pose a risk for the community.

The underlying assumption is that there is no pollution risk if experts do not explicitly confirm it. This excludes the idea of ignorance and reduces pollution to a hazard, which 'experts' can identify and put 'in writing'. Interestingly, being asked about what are his concerns about the wells (those that he 'talks over coffee') Alija answers: '*We are concerned that there are no results from experts*', that is, he is afraid that the fragile institutional structure of Bosnia and Herzegovina is unable to provide him with the 'results' that will guarantee the safety of his livelihood practices.

Hence, for Alija's discourse, the problem resides in the lack of formalised knowledge that he can refer to in case he is prompted with questions about the safety of cultivation and drinking water. He presents this as a simple problem of translation of expert knowledge into results and regulations. He does not claim his right to be represented because he is only an 'ordinary citizen' whose opinion should not matter in a fact-led policy process. What we find here is a strategy that leaves him powerless to claim any type of relevant knowledge in relation to the sites, despite he lives only a few metres away from one of the oldest ones. Yet, deferring his right of representation to experts legitimises his cultivation practices on the disposal sites: it is a strategy to appropriate the landscape that has been transformed by those others who already left.

Residents who are concerned about the need to regenerate the sites argued that the power plant and other institutions should take responsibility for the regeneration of the coal ash disposal sites, and felt that there are not forums to translate their opinions:

Ismet: "*My opinion as a citizen cannot influence* [the policy process] *at all. If they do it [regeneration of the disposal sites] in accordance with the Law on Environmental Protection, then it's maybe irrelevant what they build there. But if they don't do it* [in accordance with the law]*, as they usually don't, then there's no use in* [me] *claiming anything*."

Ismet assumes that the Law of Environmental Protection contains provisions which, without doubt, guarantee their protection against environmental pollution. This is perceived as a problem of law

implementation, and how individuals can ignore or overrule it. His opinion 'as a citizen' has no value. In this context, this emerges as a powerful argument to advance local demands: Ismet's claim suggests that where there is a proper system in place, the opinions of local citizens are irrelevant, because 'the right thing' will be done. In doing so, the argument of some of those who are building claims against polluters is not different from that of those cultivating the sites. The underlying assumption is that rational arguments are sufficient to establish their case, whether this is about site cultivation or regeneration. If only citizens could 'know' about how to react to pollution, they argue, then pollution would not be a problem at all:

> Hamid: "*we have to know and we have to be educated as citizens. So that you know [that] where there are different industries you shouldn't plant plums and apples because we know it will affect them*."

All the arguments explained above help to deny the very materiality of the environmental problem and defer responsibility to abstract external actors- experts, regulators. Pollution, they argue, would not be a problem 'if only we had regulations' or 'if Law directions were followed' or 'if we were educated as citizens about how to behave'. Having deferred their responsibilities to those with 'better knowledge' to represent them, these interviewees suggest that they are only waiting to be told what they have to do. The very conception of the self which is performed in this identity seems to prevent them from taking real action to overcome the problem. In contrast, this does not prevent them from making claims on the grounds of their own vulnerability.

Thus, while cultivating the land represents an innovative strategy to appropriate the landscape through dwelling practices- through everyday actions which contribute to maintain and develop livelihoods- this also represents an attempt that turns the back to the collective experience and the history of environmental pollution in the area by refusing to acknowledge the local capacity to identify and reflect upon pollution risks. Cultivating this wasteland may come at a high cost for the community, not only because of the potential detrimental impacts on the health of some local residents but, moreover, because the perception of the risks on the sites and the distribution of land titles of a 'newly formed' land are both processes that tend to divide the community. These ideas have also been fostered from the plant and by scientists (within an international team in which I participated) that regard cultivation as emerging from the local ingenuity to face a difficult situation. Yet, for all their enthusiasm in wasteland re-cultivation, this team was not able to rule out the possibility of food chain contamination from the disposal sites, for example, from arsenic compounds, sulphates and heavy metals such as nickel. Land appropriation in a pollution landscape is thus, a contradictory process; one that emerges associated with opportunities for local livelihoods but that does not dispel the possibility of environmental hazards looming on the background.

Dwelling with pollution

Land cultivation, as an strategy of landscape appropriation, is however practiced by a minority of residents in the communities around the disposal sites. Although there has not been a census since 1991, local residents and officials report that more than 8000 live in the immediate proximity of the disposal sites (and only a few dozens cultivate them). Thus, despite is visibility and claims to ingenuity, this is still an activity practiced by less than 1% of the affected population.

On the other hand, there is a considerable percentage of population which is concerned not just with the potential harmful effects of cultivation- which ultimately are considered as staying within the families taking that risk- but on the overall effects that the pollution in the area may be having generally in their lives. Paradoxically, while some residents took the new availability of land as an opportunity, for many others pollution meant putting under risk their small home gardens on which they relied for times of hardship. There was a widespread claim about the ways pollution had taken away some of their crops, specially plums (šljiva), a beloved fruit for many Bosnians who make liquor from it. When explaining how pollution affects their lives, residents are able to show the deep expertise that has grown through their experience of the pollution landscape:

> Ramiz: "*And all those vegetables which got leaves as they grew, those vegetables have slag* [from the ashes] *on them. So you don't have to be an expert to assess if it's good or not good for the health of the people. It isn't nice to see it, or consume it, and I'm not taking into account now…the presence, the toxic presence of those substances in the vegetables that people consumed*.

To support their claims some local activists make constant references to the health of children; the difficulties to deal with health conditions; the loss of beautiful areas where their identities could be celebrated; or the need for democracy. Even those interviewees who stated the need for expert knowledge demonstrated a sophisticated understanding of the socio-ecological situation. Residents themselves are able to reflect upon why contextual knowledge seem to be vanished in some of the discourses of landscape appropriation. For instance, a local interviewee justified what he identifies as 'lack of knowledge' among the local population:

> Mesa: "*It's normal that those people sometimes don't listen, or listen and don't understand and so on. But, you cannot say that people don't know. They know a whole lot. However, they don't know how to express it like someone who does it more and who is more active in that part. He* [the active individual] *knows how to express it, but others can't express it, but they feel the presence of that* [the pollution] *a lot*."

Mesa's argument refers to the lack of ability or practice to express knowledge (in a particular, accepted, way) but this is not equivalent to a lack of knowledge about the environmental issues per se or about the effects those issues have on the environment. For, Mesa observes, there is a difference between gaining knowledge from pollution experiences and articulating it in a way that can be heard and acted upon by other people and institutions. For instance, an interviewee explained her frustration in trying to bring her concerns to her representatives:

> Sofie: "*I'm a nobody in this…If I* [dare to say something]*, whatever I said, people would laugh at me. That's how it is. I would be laughed at, and the person who I would tell it* [her opinion] *to, who would be able to do something about it, would find me hilarious. You know, that's our mentality, because I am not the authority*."

Concerned residents have thus, organised themselves in different types of supporting organisations to collectively push for certain proposals, such an environmental NGO (Eko-zeleni), a women's organisation, a 'hunters club' or a cooperative of honey producers. The opinions of these 'activists' about what is to be done about environmental pollution within the community varied according to

their perceptions of the governance structure. For instance Muhamed (male, about 50) complained about the lack of care of different government institutions for the local community:

> Muhamed: "*they love us just as Bajro loved his mother*[2]*, and Bajro killed his mother, that's how much he loved her*, [and] *that's how much the Prime Minister Hadžipašić loves us, that's how much the Federation loves us, that's how much the Canton, and also the Municipality, love us*."

The metaphor works powerfully because of the reification of institutions such as the Municipality; the assignation to institutions of a 'nurturing' role; and the description of actions of the municipality with words tainted with emotional meanings (being uncaring, killing somebody). This type of attitude contrasts with other activist's perspectives in the area. For instance, within the same local community, Mahira (female, about 40) conferred a completely different identity to the municipality:

> Mahira: "*We cannot say that the municipality is the one to blame for all this. No, I wouldn't agree with some of our local politicians who want to put all the blame on the municipality. No! We must start from the top legislation, so the laws passed by Bosnia and Herzegovina, the Federation of Bosnia and Herzegovina*[3] *which controls the companies, which are unfortunately managed by their political people, players, who rarely act upon* [publicly agreed] *political decisions*."

Mahira does not reify the municipality and therefore, does not confer an identity other than the set of identities of the many individuals who 'manage it'. These individual identities are built upon private interests and can disrupt the policy process. As a consequence, Mahira establishes an alternative relationship with the Municipality and proposes other ways to influence policy decisions:

> Mahira: "*The other evening, we had a public discussion about electricity, central heating, water supply and other things. We reached a conclusion which we sent in writing to the Municipality of Tuzla. And then the Municipality of Tuzla will, according to those public discussions, make decisions. They will make decisions which will then be implemented*."

In Tuzla perceptions of the government institutions have been highly influenced by rapid changes that have occurred as a result of the transition from the regime in former Yugoslavia to the current governance system characterised by a chaotic structure conceived as the only alternative to stop war and genocide. Institutions are tainted by corruption scandals at all levels and confused by the inconsistencies arising from the new regulatory systems coexisting with former Yugoslavia conventions (Vickland and Nieuwenhuijs, 2005). Still, within the same context different ideas of institutions are constructed, in which the lack of trust is directed towards either individuals or institution as a whole. The result is that local people find alternative ways of liaising with their Municipality according to the perception that they have of it.

Recognising the contextual knowledge that residents hold and the complexity of governing the environment, including a realistic understanding of the capacities of existing institutions, moves residents towards strategies that truly envision a collective future and one which is not necessarily

2 "Vole nas ko Bajro mater" is a popular saying.

3 The country Bosnia and Herzegovina is divided into two entities 'Federation of Bosnia and Herzegovina' and 'Srpska Republic'. Tuzla belongs to the 'Federation of Bosnia and Herzegovina'.

tainted by dystopian visions of further technological appropriation of the pollution landscape. Instead, many activists have been able to make a sober assessment of the actual opportunities that emerge in and around Tuzla, and the ways they can access institutions to bring about better quality of life in a post-industrial economy.

The making of alternative futures

Local residents have emphasised that their landscape is not just one which has been technologically transformed, but also one in which, alongside the waste disposal site and the pollution one can find interesting and original features. Coal extraction has shaped the Tuzla suburbs towns where production is now concluded. In Sicki Brod, for example, coal extraction has completed refashioned the horizon lines. Today, the old open cast mine has been transformed into a leisure area. The last efforts to extract coal tapped into the water table and the water flew into the giant crater excavated over decades of coal extraction. This new water body was seen as an attractive feature by local residents who named it "the prospect" ("kop") and became a new attraction to the area, especially during the summer. The lake kop is highly valued by local residents who use it for a multitude of recreational activities, particularly during the summer. Since in 1998 the power plant started to advance plans to construct a new disposal site on that lake, local residents have actively organising action so that the lake has been preserved- so far- as a valuable feature of the local landscape.

The lake in Sicki Brod builds upon similar contradictions that the salt lakes in the centre of Tuzla, where the old salt mines- excavated over centuries- have now been reinvented as 'the Pannonian lakes', the only large salt lakes in a city in Europe[4]. These Salt Lakes are now an important tourist attraction for the city. The lake 'Kop' does not have such scale, but it is equally important for the prospects of a small suburban community. It represents a recuperation of the mining legacy which builds upon the post-industrial contradictions of a pollution landscape. Like the Pannonian lakes, for example, the lake 'Kop' is also associated with a subsidence problem that is now threatening the security of a dozen of families whose houses are on the cline overlooking the lake.

Practical attempts to construct opportunities in a pollution landscape are thus crucial in the making of a collective future. Local activists have long associated their demands for a better environment with proposals for the reforestation of the disposal sites, reduction of the prices of electricity and improvement of the supply and development of a district heating system. As the power plant has established itself as the main electricity producer of the country, its managers have now the opportunity of reflecting upon the power plant's role within the local economy. What some the power plant managers expressed only in private in 2005- their concerns about how pollution from the plant could be affecting local residents- were expressed in the late 2011 as part of the discourse of public utility of the plant, especially promoted by some managers who were trained under the paradigm of self-management in which workers and residents were considered an integral part of the power plant. Adversarial relationships with the municipality, which claimed the need for the power plant to pay an economic compensation to the municipality for the pollution, have clearly softened in the space of only 6 years. Now the power plant is building the district heating system and local activists' discourses of environmental degradation show themselves more open for negotiation and willing to discuss collective futures.

[4] See http://www.economist.com/blogs/easternapproaches/2012/07/tuzlas-lakes (last accessed 8 August 2013)

This does not mean that all the history of environmental pollution can be erased from the landscape, but it points out at the importance of a dialogue in which industries recognise the value of local experiences of pollution and act upon those. In my latest interviews with local residents in October 2011, many expressed worries about both their health and their future prospects. There were still claims about the long history of pollution and the chaotic governance structure. And yet, the sense of desperation had somehow ameliorated, even among those who attributed serious illnesses they were suffering to the pollution. Their explanations of how they now lived with pollution celebrated the changes in attitudes and action that started to be visible from within the municipality and the industry. These achievements are, however, nothing to be attributed to the openness of the power plant or the proactive action of the municipality. In 2005 there was little recognition of the importance of local views on the pollution, other than those who fitted with existing plans to recover the sites for productive use. In 2011, however, local residents had demonstrated that through a combination of dwelling practices and activism they were able to assemble the arguments to point at possible routes for improvement in their communities. Whether their important role in shaping this pollution landscape for a working future is recognised by others is, however, another matter.

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