Follow the Dust: Centering Polluted Natures in Warsaw

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Statement

I hereby state that this dissertation contains no materials accepted for any other degrees in other institutions. The thesis contains no material previously written and/or published by another person, except where appropriate acknowledgment is made in the form of bibliographical reference.

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Abstract

In winter 2016/2017, a series of smog fits forcefully opened a public debate about air pollution in Warsaw, Poland. Set against the backdrop of the environmental concerns amounting to a crisis, the dissertation examines ways in which urban natures became a focus of urban politics. The realization that the city suffers from significant pollution initiated a process of destabilizations in the urban space and beyond, prompting a re-evaluation of the mode of development in the past decades. Drawing on an ethnographic research spanning from 2016 until 2020, this dissertation showcases different dimensions of the urban natures, mapping the intricate connections between the air and the land in the city as well as the pushes and pulls to assert control over their different materialities.

As the causes of pollution have been deeply intertwined with the rapid growth in Warsaw, the dissertation follows the process of 'repair', both in terms of contentions surrounding the toxicities and the environment and an examination of Warsaw's position as an aspiring global city. I show how the turn towards the urban natures revealed some of the old inequalities in the city and produced new ones; highlighting how the hierarchies have become inscribed in the urban processes. Providing an analysis of spectacular greening projects, the thesis highlights the 'spectacle of repair' as one of the authorities' responses to the crisis, exploiting the tension between the visible, tangible and therefore manageable natures on the ground and the invisible free-floating air. Facing the diffuse and largely unseen risk, the air and the land in the city have been mobilized and afforded novel meanings and a sense of intimacy. This is explored through an examination of the new citizen science networks that navigate the pollution by striving for spatially embedded, intimate knowledge, but also through a story of a disappearing historical green ventilation system. It is examined how infrastructures and their materialities can mirror and drive the forms of political claims, such as a demand for more public control over planning and a halt to development.

The study thus provides a critical analysis of politics of green infrastructures framed by struggles over urban natures. The thesis also contributes to wider debates within the political ecology literature by proposing novel understandings of restoration policies amid environmental crisis. The examined processes are embedded in unique histories of the region, going beyond the period of the post-socialist transformation and providing an analysis of its aftermath, namely the consequences of the embrace of neoliberal policies.

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For anthropologists, doing research is never an individual endeavour. Almost by definition, we work with others and our writing is simply a careful recreation of connections and links collected thanks to the people in the field. I would therefore like to thank all the people in Warsaw, who helped me along the way, friends and interlocutors alike. This research quite literally could not exist without you.

But this research also could not exist without people who had helped me off the field. To list just a few, my family, Milan, my friends, colleagues and professors at the university and all the kind people in academia. My gratitude also goes to my supervisors, who always supported me and my ever-changing research plans.

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1. Introduction: Breathless in Warsaw

> "Look, we buy the ekogroszek (*literally eco-peas, a type of coal based fuel*), you throw it in in the morning, it slowly burns, gives nice heat, I don't need to worry, there's not much work around it really… Yes, I hear the talk about smog, but come on, we have always done it like this and it's not like anyone among our neighbours would burn trash or who knows what… we are proper people."

Agata, a middle-aged inhabitant of a residential area with single family houses in one of the city's neighbourhoods told me about her heating routine while walking her dog at the edge of the city. Her house is also connected to the gas network, but she finds it more expensive, so "why would you burn the money if you don't need to." Gas is convenient for the occasional 'lazy days' as Agata put it, but mostly she opts for the old-fashioned coal heating using the popular ekogroszek, with a name deceptively suggesting that it is an 'ecological' type of fuel. Meanwhile, researchers from the Technical University together with the Client Earth organisation established that the fuel emits more than forty times the amount of particular matter (i.e. dust) than would match the norms. Ekogroszek is clearly anything but eco. Not that my interlocutor would need to hear the data. Agata knew well that coal fuels inevitably turn into dust-filled smoke, she has seen it all her life. Nevertheless, her decision about what heating to use was simple. Most people in her street do it like her, exchanging the discomfort of shovelling heaps of coal and breathing dusty air for saving up a bit of money during long Polish winters. Even though Agata could eventually switch to gas, the option of no-coal lazy days by far does not extend to all the inhabitants with solid fuel furnaces that paint the air quality map of the city dark red during the cold nights. The air pollution in Warsaw suddenly became a topic of the day during a series of smog fits in the winter of 2016/2017. The dust lingered in the air for days; kickstarting a process of soul searching linked to urban ecologies. Suddenly, there was a time to ask uncomfortable questions about what is going on in a place that prided itself to be an up-and-coming global city.

Traditionally, the types of smog conditions are divided based on other two global cities; there is a Los Angeles type and there is a London type. The London type is named after the catastrophic smog episode in 1952 nicknamed a 'pea soup fog'. It stems from the presence of heavy industry as well as burning of coal in the households for heating; like Agata does. And yet, the solid fuels burning is only a half of the story that started to haunt the city so set on a path towards growth. The second type, the Los Angeles smog is bound to development of automobilism and traffic jams, contributing to air pollution through fumes and dust. Despite the fact that Warsaw has very little industry left within the urban grounds, the city suffers from both kinds of conditions, creating a pattern of its own. London in winters, Los Angeles in summers; Warsaw all year round. Inhabitants rarely have time to catch their breath for long enough.

Insufficient investment into heating infrastructures, continued support for use of coal in households oftentimes facilitated by widespread energy poverty as experienced by Agata on the one hand, and the

rise of consumerism and individual automobility on the other. With a degree of simplification, the success of the city providing the inhabitants with a chance to reach out for an ideal of a car and a house on the outskirts shook hands with years of infrastructural underinvestment and neglect for the issue of the inhabitants struggling to afford heat in their homes and the kinds of fuels they resort to. The pollution crisis really represents a full circle showcasing the processes that characterise contemporary Warsaw; the shiny consumption and new construction developments vs. the poor underbelly, grey with the coal dust. The story the dissertation tells is set in the moment of tough awakening to the inevitably toxic consequences that the chosen mode of development has led to.

Facing the diffuse and largely unseen risk in the air that one still knows is out there, everywhere; many people in Warsaw changed their ways. During the days with high pollution levels, some avoided going out when they could. Some organized and formed a network of citizen scientists measuring air quality levels at their doorstep; producing spatially embedded, intimate knowledge about their homes; about their city. And some demanded that the city re-evaluates its development and halts the ongoing destruction of public infrastructures that could have prevented the crisis. If I spoke to Agata today, she would possibly not tell me that she has always burned coal, so what is the big deal; she would probably stall, maybe not admit that she has been using coal at all. Otherwise 'proper' people like her have often been shamed in the process of 'fixing' the city; labelled uneducated and perceived as a root of the air troubles. And this is one of the crucial characteristics of the reconfigurations opened by the green contentions; underlying hierarchies have been highlighted and new ones have been produced. This is a story with few winning, but with many losing.

Air pollution (or the smoke, the dust, the smog) is a tricky phenomenon. As much as it is free and ungraspable, flowing around people as they walk and talk and breathe, surrounding buildings and trees, it would make little sense to analyse it without binding it to the ground. And landing the smoke in the material urban landscape translates into exploring a tension between the ultimately indivisible and the divisible; the very much divided land. A tension between the air that freely floats and crosses boundaries with ease and the ground, with its green infrastructures, chimneys, cars, trees and people with uneven resources and power. After all, the toxicities present in the air have been lifted from somewhere; linking the two realms by an inseparable bond. Any attempts of managing the air pollution levels must be carried out on the ground; and the tangible urban space can be just as elusive as the air itself.

Some of the toxic particles have been lifted from Agata's chimney and old boilers have rightly been one of the targets of the anti-pollution policies. Other toxicities produced on the urban highways, serving the wealthy suburbanites not so much; in fact, more and more roads are being built at this very moment. And some toxicities might or might not have been pumped out of the city by a sprawling system of green ventilation corridors; except amid a lack of knowledge, they have been built over by new construction developments. During the years' long turmoil, the urban authorities turned towards the

trees and greenery to showcase determination to keep the green city label; the urban space paradoxically really became physically greener, but the polluted air has not gone anywhere.

The pushes and pulls to assert control over the different materialities and forms of the urban ecologies thus occupy a central stage in the examination of Warsaw ecologies in this dissertation. The land, the air, the shrubbery, dust and green corridors; their materialities can mirror and drive the forms of political claims that are made. Some prove easier to handle than others. Some can even prove quite easy to forget about. And an opposition between an active process of concealing and the activists' attempts at bringing issues back to light forms a crux of the story in Warsaw. More than anything, this process of covering and uncovering shows how green politics entered the central stage in the city and urban ecologies became produced as a legitimate issue to address, to fight about.

Air pollution has thus acted as a spark to what could be widely understood as a process of repair. The repair of the air via attempts to fix the air quality readings. Attempts of the city authorities, but also attempts of the organized inhabitants exerting pressure on urban policies. And the repair of the urban space and its position as an aspiring centre within the region and beyond. Except what makes the story messy is that there has not exactly been an agreement on what such repair entails; on what a good or at least a good enough city looks like. The painstaking process of figuring out reducing the amount of toxins in the air thus got intertwined with management of visibilities; with keeping the appearances of an up-and-coming city. As the chapters will show, both dimensions of the repair process have deeply material consequences, regardless of whether they aim at containing smog or containing discontent. In the process of facilitating the repair, ecologies became intimate in novel ways and the various dimensions of urban natures became imbued with meanings. Air stopped being obvious, but so have the green spaces; all has been up for a careful re-examination by the inhabitants and the city.

The city and the nature, both are ultimate cultural artifacts sometimes presented in opposition; romanticized and filled with meanings and yet deeply intertwined in their material presence. While a dated nature-society dichotomy would undervalue and overlook urban natures as not true or authentic[1] (as opposed to 'wilderness' found in large natural parks), the enacted tension between the ecological and social in Warsaw and elsewhere is illusory; a false choice between either or. There is nothing unnatural about urban environments and urban nature specifically, as per Harvey's famous assertion that 'there is nothing unnatural about New York City' (Harvey 1996, 186). And as much as there is nothing unnatural, there is also nothing inherently inevitable about it; the nature and society are always produced and coproduced, made and conditioned. Even though such productions are necessarily contingent and full of surprising turns, it is possible to identify prevalent processes and directions they are taking. Following Rademacher and Sivaramakrishnan's (2017, 7) concept of ecologies of urbanism,

[1] As Hinchcliffe et al. (2005, 645) put it: Urban natures "often do not seem to count as good representatives of nature […] Not pure enough to be true and not human enough to be political".

a notion of 'ecology' that evokes a singular, unified urban nature becomes replaced by multiple ecologies and natures. It is a nod to a multiplicity of forms, scales and experiences that can be traced in the research; broken down into pieces that can be grasped analytically as a set of interconnecting relationships that are permanently in flux. And more than anything, the different scales covered in the dissertation reveal the connections and disjunctions present in the ecologies of urbanism. Timothy Choy and Jerry Zee (2015) propose embracing a mode of 'suspension'; taking a step back and examining the new conditions in the atmosphere and beyond. Suddenly suspended in the thick polluted air, Warsaw could be seen more clearly.

Centering Warsaw in time and space

Warsaw rarely is love at first sight. Western press reporting on Warsaw in 1994 suggested that 'Warsaw has a face that could only be loved by its mother' (Kicinski 2002, 71). Until these days, the city would hardly be described as beautiful, at least not in a traditional sense.[2] Completely rebuilt after the near-total wartime destruction, Warsaw remains a city with a modernist urban layout that however remains forever unfinished, defying simple descriptions. As a cultural sociologist Bartmanski put it:

> "… (Warsaw's) identity is still relatively opaque, unobvious, challenging but also open-ended and malleable enough to accommodate new, radical forms of urban experience that have already been successfully tested and enacted elsewhere." (Bartmanski 2012, 56)

'Unobvious' in its feel, this bustling city of 1.8 million inhabitants is the true centre of economic and social life in the country. As such, it is the place where many of the processes in Poland have been magnified, while others remained pushed to the background by the rattle of the city. Surely also due to its dramatic history, there has been a tendency in Poland to interpret many urban phenomena through the lens of its past. On every second corner, one finds a small memorial about a war atrocity, and there are whole districts built with a memory of the victims in mind.[3] The war is not the only period always lurking in the background, as socialist histories also play a crucial role in the way that inhabitants and visitors understand their city, whether it comes to the urban layout, the aesthetics, and architectural styles, but also in terms of interpreting larger urban and societal processes. But as much as the 20th century histories of the city are fascinating, this dissertation suggests that it is neither the World War II events nor socialism that we could find behind the most important contemporary processes.

[2] Lacking major sights, it is instead Cracow and Gdansk that remain the prime tourist magnets in Poland, attracting swaths of visitors. At the same time, the lack of tourists is one of the reasons why it can be argued that developments in the city serve the locals and not international tourism, however narrow or exclusive a given group might be.

[3] A graphic designer Filip Tofil designed a project called 'Debombing', aimed at putting an end to the seemingly neverending martyrology present in Warsaw space and minds. By releasing balloons in the shape of bombs, he suggested freeing the city from the constricting monument-like feeling, allowing for more liberating futures. More at: https://futuwawa.pl/debombing-project-pl-277.html?q=debombing&m=0

Staniszkis (2012, 83) posits that Warsaw's identity can be primarily traced to historical leaps and violent ruptures. And arguably, the most recent rupture and an organizing principle of a kind has been tightly linked to neoliberal ideologies. The omnipresent ideology of 'transition' or 'catching up with the West' has provided powerful imagery for the post-socialist modernizing project (Buchowski 2006; Dunn 2004).[4] Presented as a hard, but nevertheless, necessary trajectory, the catching up principle remained the main rule guiding the dreams of economic, but also social transformations. The most tangible ideological outcome of the transition narrative that can be traced in the urban realm led to what some describe as a 'general neoliberalisation of politics' (Gibas and Boumova 2019, 29). Similar to other cities in the region, urban change in the city has been shaped by insufficient regulation and a belief that the free hand of the market would eventually solve many of the problems in the city. The embrace of the promise of free market capitalism can be partially understandable, as after years of late socialist and post-socialist stagnation, inhabitants yearned for a better life, associated with images of financialized growth. And for years, Poland's GDP has in fact been swiftly increasing; but so have the social inequalities.

The time span covered by this dissertation partially touches on this time of transformation. However, as the following chapters will show, it can be argued that contemporary Poland should be understood as going through the aftermath of the post-socialist moment that may be termed post-post socialism. The headache that was left by the full embrace of neoliberal policies has led to various responses and recalibrations of the system. Most will immediately think of the creeping adoption of illiberal policies in the region. Defined as opposition to liberal democracy, globalization, and to an extent, neoliberalism itself, the rise of illiberal democracies regionally and globally has been hotly discussed in academia and beyond (Grzebalska and Peto 2018, 156). But while this process could be witnessed on a national level and in the state policies, Warsaw, like other major cities in the region, has largely remained in opposition to the illiberal developments. Ruled by the series of liberal mayors[5] (with an exception of Kaczynski administration in 2002-2005), the city has instead been at the forefront of neoliberal tendencies and as of lately, of what can be interpreted as a degree of (neo)liberal rebalancing.

One of the crucial consequences of this position has been the emerging incongruities linked to a strive towards becoming or being a global city. On the one hand, there has been a continuous economic development, but on the other, there has been a growing trend tilting the urban policies towards (at least declaratory) balanced, green approaches to governance among the cities in the global North. As much

[4] There are some shared features that can be identified in cities throughout the region, leading some to argue that the nature of urban restructuring in post-communist countries has a common logic" (Sýkora and Bouzarowski 2012, 44).

[5] I started the fieldwork while a scandal ridden liberal administration of Hanna Gronkiewitz-Waltz was in power. In 2018, she was replaced by Rafal Trzaskowski, a young, more progressive face of the party. Among many, Trzaskowski symbolized hope that liberal, pro-market policy can be reconciled with more pro-social and environmental policies. As one of the most popular figures in his party, he ran in Polish presidential elections in 2020, losing by extremely close margin to the conservative incumbent Andrzej Duda.

as it can be argued that the sustainability paradigm embraced by mayors worldwide is only an illusion, for a long time, the chosen mode of growth in Warsaw did not attempt to engage with it at all. As the study will show in the chapters, a forceful entry of air pollution in the public debates in fact coincided with the gradual adoption of green policies as one of the symbols of progress. The tension between the omnipresent toxic air and the carefully curated image of Warsaw as a successful city thus provided an extra impetus for the contentions associated with urban natures.

The making and unmaking of urban natures that this dissertation is focused on provides a convincing example of how such unique histories and accompanying socio-environmental processes shape the urban ecologies (Heynen et al. 2006, Wachsmuth 2012). Warsaw is arguably an exceptionally green city when it comes to the extent of 'ecologically active surface' or simply the green and blue areas on the map within the urban grounds. There are many left-over green spaces as well as an abundance of maintained greenery such as parks and even urban forests. By tracing the histories of how these spaces came about, it is revealed that the seemingly overwhelmingly influential modernist blueprint laid out by socialist planners has in fact been supplemented if not overshadowed by newer waves of greening. Some of them stemming from capitalist ruination, others from new approaches to what 'good' urban greenery facilitated by the city hall should look like. The same will be argued in relation to air pollution. Shifting away from the large-scale industrial pollution during socialism, the current toxic mix can rather be traced to more recent past and policy decisions that facilitated the current crisis. The pre-1990s or 2000s histories are important and set the scene for some of the path-dependencies, but they have been overshadowed by newer developments, rooted in the neoliberal era.

Grubauer and Kusiak (2012, 13) outline the changing receptions of the neoliberal urbanism among the citizens, spanning from "the initial mixture of fear and enthusiasm, to the practices of "domestication" (Stenning et al. 2010) to a gradual development of political consciousness and collective action at a community level." The growing 'collective action and political consciousness' in the city could be traced throughout all the chapters in this text. Many inhabitants have rejected rising inequalities and disregard for urban ecologies that have been inherently connected to the prevalent mode of development in the past years. The brewing contention could also be traced to the plethora of citizen groups that organize themselves, produce knowledge and engage in activism. I have had a chance to follow the activities of several such organizations, ranging from loose groups of gardening enthusiasts to well-organized urban political activists with representatives in the municipal councils. As the non-state actors have been gaining strength in the co-construction of local politics, the authorities have been forced to react in one way or another. It is also important to note that their activities, big or small, have had an amplified impact by sole virtue of coming from Warsaw as the centre of the country and thus have been more likely to be reported on by the media and academics as well as to be picked up in the social media. And with the rise of environmental concerns and discussion about urban nature, the city hall has responded with a multitude of approaches, ranging from overhaul in policies, through attempts at

greenwashing to simply sticking to business as usual. However, as the dissertation will show, the spotlight on green policies has become an entry-point that opened up new fronts in the urban politics; and as one interlocutor told me, there is no looking back to the booming 2000, with the power of the capital as the sole ruler in the city.

Chapters overview

The dissertation consists of five chapters that follow different dimensions of urban natures in Warsaw through five separate, yet interconnected case studies. The opening chapter, 'Urban Gaps: Navigating the Battle over Urban Wilderness' analyses shifts in urban policies; from undermining of social life in the 'left over' spaces in the city towards providing openings for re-evaluation of their role. I highlight how authorities and developers have attempted to frame such spaces as useless and dangerous in order to justify efforts to initiate real estate development and reinstate these spaces within the circuits of capital accumulation. This chapter attempts to bring attention to the often-unforeseen social value held by such urban interstices and their unique liminal condition in urban space. The analysis highlights how municipal policies have been informed by the norms associated with the fetishization of private property in the post-transformation years as well as the attempts to physically and metaphorically 'clean up' urban space. Using the example of the Jazdow initiative, the chapter examines how the shifts in official imaginaries and an embrace of the creative city paradigm have been used to keep at least some of such spaces from development. Seizing the opened-up possibilities in the policies of the city hall, the activists at Jazdow have subversively employed the official language of participation and public space activation to keep the area open for experimentation. The chapter concludes by pointing to an emergence of environmental concerns, largely related to air pollution, as a resource that can not only be drawn upon to gain perceived legitimacy in urban struggles but also used to jump scales from localized issues to global ones such as energy policy and climate change. Besides the analytical section, the chapter also has another purpose. As the first chapter, it takes on a task to introduce the reader to the field by following the histories that pertain to the left-over spaces but also set the stage for the other cases in the dissertation.

The 'Air Ordering' chapter proposes an analysis of the impact of air pollution in the city using an urban political ecology lens. After providing an overview of the characteristics of local pollution, it investigates how this novel issue of concern challenges the self-image of Warsaw as a successful global city and contributes to the social restructuring of the city. Using examples of anti-pollution activism and a rise of new pollution related consumption, the chapter pays attention to how despite being framed as an issue of general concern that touches everyone's lives, pollution has a highly uneven impact among the population in both its effects and in search for culprits.

The following chapter 'Why Smoke Two Packs instead of One: On Air and Knowledge Intimacies' takes a closer look at how people navigate their everyday lives with the knowledge that they may

endanger themselves by simply breathing the polluted air. Going against the theorists who posit that pollution can often be intuitively felt through sensory experiences, I am instead looking at how people use and demand technical measurements to make sense of their experience. The chapter counterposes the official measurement systems and the new citizen-science projects. The small DIY measurement stations used by the citizens are decidedly less precise than the official measurements, but the chapter shows how people negotiate uncertainty and trade off precision for more intimate connections of data to their homes and to the city.

The chapter 'Green Wedges: Towards an infrastructure of withdrawal in a polluted city' focuses on a disappearing green air ventilation corridor system. The chapter shows how the very materiality of the ventilation infrastructure channels the kinds of political claims that are made and eventually even shapes the prevalent notions in urban policy making. The chapter points out the possible mimetic link between the character of the green ventilation infrastructure and the rhetoric employed by the urban activists. The 'withdrawal' infrastructure of the wedges possesses a unique, negative nature that relies on no technology or upkeep whatsoever, and an abstention from construction activity is required for the corridors to remain functioning. However, halting construction proved to be difficult to achieve in a developing neoliberal city where regulation has often been either bypassed or rather weak. It is argued that corridors act as a jumping pad, allowing to raise questions the central role of private property rights as well as extractionist, developmentalist tendencies that have been deemed responsible for both the pollution and unchecked urban development in the past decades. Even though the functionality of the ventilation system as a pollution alleviation measure has been put in question, the state of suspended knowledge has not stopped the infrastructure from serving as a potent symbol. The chapter also addresses the interplay between the fixity of the corridors and the diffuse issue of air pollution and entanglement of the infrastructures that produce it, showing how the properties of the system provide a necessary ontological fixity to launch urban struggles.

The chapter 'Million Trees for Warsaw' investigates greenwashing tendencies propelled by the city hall. The spectacle of a clean and green urban space put up by the city focuses on creating an image of the authorities actively combating the pollution as well as working towards making Warsaw more 'livable'. At the same time, the two major roots of pollution found in ever-increasing car traffic and coal-heating systems remain ignored amid a lack of political will. The chapter argues that mitigation strategy of the city hall thus heavily relies on management of visibility; attempting to alleviate the citizens' pressure to tackle the largely invisible air pollution by delivering the tidy greenery desired by the urban elites, keeping the city fit for competing in the neoliberal global economy.

The case studies are followed by a chapter 'Reflections on methodology and being in the field'. The chapter gives details on methodologies employed in the dissertation. Moreover, it provides a reflection on the fieldwork and some of the issues encountered during the research. These include a commentary

on how to reconcile one's research with notions of a systematic immersive fieldwork according to anthropological tradition or a reflection on relationships in the field.

2. Gap Life: Tracing urban policy-making through spatial interstices

Scene 1: The blooming meadows at the riverbank, just a few minutes' walk from a new housing estate carry some signs of earlier attempts to create paths in them. At one place, there is a crooked remnant of a football goal, which lurks out of the weeds and grasses. As I roam around, a middle-aged man approaches me, carrying a knife. With nobody around, not the best scene to be in. But soon enough, all is explained; the man carries a huge bucket of freshly cut wildflowers that he is picking in order to sell them in the city later. He tells me that after losing his home, he decided to build his tent in the area by the river and makes use of the spring bloom the best way he can. Do people come for walks over here? 'Sometimes. Not too much.' Uncertain about his future, he is glad that he found a spot where nobody bothers him and yet where he has easy access to the resources of both the riverside meadows and the city.

Scene 2: 'I really can't understand how this is possible', I say to a friend of mine, who came for a visit and wanted to see one of the huge empty lots in downtown that I talked about. The lot is in Wola, a quickly developing central area that has changed from a predominantly working class to a business district within a few years' time, spanning through the territory of a former Jewish ghetto. I originally paid attention to it, because the same street, just a few meters away, used to house a legendary café-bar-club, where cultural elites of the city would hang out, before being shut down due to noise complaints. The last time I visited the lot just a month ago, there was an eerie quiet to it, with just some plants and grass here and there making it through the patches of concrete fighting the autumn wind. With a low, see-through fence and 'no entry' signs, it seemed weirdly isolated. I remember meeting two elderly women feeding stray cats on its side. At the time, it was surrounded only by the empty housing blocks, ready for demolition (they stand until now) a car repair shop, and new high-rises in the distance. And now, it is a lively construction site.

Scene 3: I am checking a courtyard for a path through shrubbery right next to a few socialist blocks in a new exclusive area in Warsaw, looking for a place called Szopy Polskie. I know it used to be a space with almost a rural feel on the side of former agricultural fields, now with only a couple of buildings remaining. When I ask a woman taking her dog out around the block about the place, she has no clue, she claims she has never been there, she is 'scared about going down there, who knows what's in the shrubs'. As it turns out, the vast space I was looking for opens up just a few meters from where we had our conversation, behind the overgrown greenery. I speak to one of the last occupants, an old woman, who has lived there all her life, seeing the fields disappear, sometimes being transformed almost into a forest like landscape. She shows me that recently, two homeless people moved into the field area, but otherwise, 'it's all calm'. She knows that a new development project is about to fill the whole view from her house. 'Well, it's a city, it must keep on developing, I guess… I just hope I will be able to stay here' she says, as we watch over a swath of land stretching almost all the way to the riverside.

Figure 1. Scene 3. Szopy Polskie (picture by author)

Introduction

When Warsovians are asked to reflect on their city, they often steer the conversation towards the phenomenon that I have decided to call urban gaps. As Joanna Kusiak contends within the opening pages of 'Chasing Warsaw', the city is marked by many small and large open spaces with an interstitial character that are seemingly 'left-over' and lie derelict (Kusiak 2005, 303). This is a result of a combination of the planned and the unplanned, as Warsaw has a scattered built structure stemming from modernist planning, destruction during the World War II as well as more contemporary developments. As an illustration, the reader can imagine terrains that span from halted construction lots and squares turned into improvised parking lots, through to meadows and poorly kept lawns by the roadside, to ruined socialist sports complexes. As many of these hard-to-define areas bustle with vagabond greenery and can still be found in the very city centre, both the municipal government and developers often have their eyes on them as possible sites of lucrative future urban development.

Using such green spaces as an ethnographic lens, this chapter analyses shifts in urban policies that have led from undermining of social life in such areas towards providing openings for re-evaluation of their role in the city. The chapter begins with an exploration of city hall policies as well as the prevalent imaginaries of neoliberal spatial order and urban life that have often paradoxically led to both production and disappearance of the gaps. The analysis links such processes with norms associated with

a fetishization of private property in the post-socialist countries (Hann 2005) that Sonia Hirt (2012) once called a condition of privatism, signaled by disintegration of public spaces and a belief that it is in the private realm that ensures a thriving society. Besides the centrality of private property, the chapter focuses on both physical and metaphorical 'clean ups' in the urban space facilitated by the city that made the existence of the unruly green gaps in the city highly undesirable.

Zooming in on a contrarian approach to the gap spaces, the text also highlights the often-unforeseen social value held by the urban interstices in Warsaw and their unique liminal condition in urban space (Berger 2006, 31). Using an example of the Jazdow initiative as one such rebellious 'gap' in the very city center, the chapter examines the dynamic changes of the discourses of the municipal government and explores how the shifting official imaginaries have been used to save some of these spaces. Seizing the opened-up possibilities in the policies of the city hall that has embraced the 'creative city paradigm'[6], the activists at Jazdow subversively employed the official language of participation and public space 'activation' to keep the area open for alternative social experimentation. Activation is an emic term that the urban activists in Poland use, denoting opening up spaces for public use and filling them with all sorts of social life. Urban activation thus perfectly fits with the newly embraced creative city approaches, influenced by the now infamous works of urban consultants Richard Florida (2005) and Charles Landry (2000).

The chapter also points to a recent emergence of environmental concerns as a way in which urban struggles may be articulated and used to link up localised issues with national and global ones. While the urban agenda is often perceived as confined to a specific place, embedding the conflict within transnational environmental activism may provide a boost in legitimacy as well as equip the activists with new tools in their work. The air pollution crisis that has resonated amongst the local population has thus allowed for a re-evaluation of what urban 'gaps' represent and revealed them as an inherent part of the urban realm, possibly putting an end to authorities and developers seeing them as black holes in the city.

A leftist Warsaw-based publisher that I talked to about what I perceived as a lack of social life in the urban interstices of Warsaw exclaimed that "Warsaw is no Barcelona!" Visibly surprised by my problematising and questioning the processes that might be behind a 'no Barcelona' vibe, she continued: "People in Warsaw always make their own rules. When the need will arise, they will figure something out." I therefore hope that the chapter will reveal that 'figuring something out' and making the city more accessible to everyone has already begun.

[6] Creative city development preaches harnessing of cultural resources and symbolic content of urban economies and appropriates 'local peculiarities' for economic development (Novy and Colomb 2013, 1821).

Figure 2. Jazdow (picture by author)

The Social life of 'gaps'

A city official responsible for the greenery remembered how when she was still a student at the university in the 1990s, a group of Swedish students visited the city and said that Warsaw still looked like it is after 'bombardment'. She went on: 'Maybe it was a bit like that, maybe it still is. That's why so many green areas could be preserved.'

In this chapter, gaps will be used as an umbrella term for the informal, interstitial spaces that often remain as a reminder of wartime destruction or poor planning, spaces that either lie derelict or are not used for purposes or in ways in which they were designed. In the Central Eastern Europe (CEE) and in Warsaw in particular the urban interstices have a special significance due to particular histories of destruction and consequent waves of construction that contributed towards the spatial organisation of the city. If these gaps appear in the literature, they are often identified as being the result of post-industrial economies giving rise to abandoned factories in the inner cities (Edensor 2005) or of urban sprawl (Sievert's Zwischenstadt concept, 2001). In Warsaw, such spaces have been present since the World War II destruction (when approximately 84 per cent of the city was destroyed[7]).

[7] The process of post-war reconstruction was a crucial element of the state propaganda and remains deeply ingrained in the consciousness of the people in Poland. Groups of volunteers would arrive from all over the country to aid the efforts (oftentimes on Sundays) and the material such as bricks would be brought in from other cities (Kenney 1997, 121,146)

After the war, some of "Warsaw's emptiness has often had a planned character" (Zydek 2014, 76). The urban development of the city became fully controlled by the planners, as in 1945, as 93 per cent of all land in the capital was nationalized by the so-called Beirut decree (Kusiak 2012, 303). The move provided the communist party with virtually a free hand in deciding the spatial development of the city, stripping the land of its commercial value and opening possibilities for an airy, modernist development that extended beyond the city centre[8].The city outline included monumental open spaces that have been hard to upkeep and often originally served predominantly ideological goals such as a vast Defilad Square that hosted regular parades. The original urbanist designs, just like in most of the Eastern bloc, were also full of greenery and it was only later, typically due to lack of funds, that the landscaping did not go according to the original conceptions. In addition to that, the Warsaw urban development was designed to support a creation of multiple smaller centres in the city relieving the downtown, a plan that however never came to successful fruition, again due to financial constraints. The anticipated district centers were often left unfinished, as well as the idea of a polycentric city. The free space allocated for future construction or landscaping however found its purpose in the early 1990s, when the areas got turned into parking lots and open-air markets (Flierl 1998, Staniszkis 2012, 87). Much of the perceived emptiness also remained due to a system of ventilation corridors creating a radial within the urban bounds (that will be discussed below) that ensured a great amount of 'undeveloped land' remained as such.

The disintegration of the socialist regimes ushered in further 'gaps' that appeared together with the destruction of public facilities and infrastructure on the one hand and sprawling suburbanisation on the other. Urban interstices have to be placed in the context of the post-socialist reality and a Polish version of 'actually existing neoliberalism' (Brenner and Theodore 2002) that swept the whole CEE region from the 1990s. The processes unleashed with the neoliberal governance led to an interesting contradiction. While the urban interstices started disappearing quickly during the late 2000s, filling up with new constructions, others paradoxically sprang up in spaces where busy urban life used to take place. One of the reasons for the newly appearing gaps could be found in a relatively belated process of deindustrialization that hit the city. Throughout the 1980s, Warsaw was still a largely industrial city[9], with many factory complexes located in the vicinity of the centre. There is a certain peculiarity of the gaps that appeared in a former industrial land, as very often, they carry a burden of heightened toxicity lurking in the soil. Besides deindustrialization, many new spaces arose due to failing public infrastructure and ownership irregularities. The fuzziness of actual ownership and the messy land restitution process in the city contributed to the production of these new gaps. Michal Murawski (2018, 26) analyses the restitution in dialogue with Verdery's description of the fuzzy property in Romania

[8] Weclawowicz speaks of the post-WWII mosaic-like structure of the city, replacing the earlier dense character (Weclawowicz 1975, 60).
[9] About one-third of Warsaw's industry used to be located in the central neighbourhoods (Grubbauer 2012, 41).

(1998, 179). He claims that while in her account the fuzziness of the relations could play out in ordinary people's favour, in Warsaw no such opening could be observed, as it has led to a rather conscious process of 'dispossessing the already dispossessed' while benefiting the wealthy and the 'corrupt'.[10]

Scholars of political ecology have demonstrated the stark economic unevenness that can be found in urban landscapes (Heynen 2014); in Warsaw such unevenness can be traced in the natural and social lives of gaps as well as the gaps that no longer exist. Interstitial spaces are thus today infused with meaning stemming from such histories, serving as some of the most important sources of contemporary traces of the pre-war, socialist, but also recent capitalist past, through which unique ecologies are produced. In his famous article on Berlin after the fall of the wall, Huyssen (1997) argued that voids of the city can be built upon, but the sense of emptiness would stay on, keeping the trace of the inaccessible past in the present. As opposed to this sentiment, when the gaps in the CEE region disappear, it is often a fast process, erasing them for good; just as many other traces of the past disappear in the frantic financed restructuring of the cities during the past decades. Histories embedded within the urban fabric are being remodeled without looking back. Thinking with Walter Benjamin (1999), interstitial spaces in Warsaw, especially the ruinous ones can have the dimension of a 'petrified life', acting as stark reminders of the fragility; the traces that especially those in power do not really wish to live with.

Sleepy hollows

Despite often being framed in moral dimensions of waste and decay, remaining urban gaps have stood out from value-producing structures of the city as perceived by authorities and developers (De-Sola Morales 1995: 120). They can be researched as a mitigating border zone in relation to the omnipresent commodification of space as well as the last refuge and potentiality for alternative uses. They can be seen as places that are not 'stage- managed for tourism or consumption' (Gandy 2009, 152) or places with ruderal ecologies where unexpected human and non-human neighbours come together. Unintentional natures thus definitely are not an antithesis of urban space (Trepl 1996). In a city that lived through a wartime ruination and a decades' long process of slow rebuilding, there are even local literary accounts of how ordinary people actually enjoyed hanging out amid the destruction, savouring the feeling of freedom from the societal conventions and the gaze of the upper classes, for example in Leopold Tyrmand's cult novel 'The Bad'(2014), originally published in 1956 (via Poblocki 2015, 205).

Upon entering my field, and influenced by the existing literature on gaps, vague and left-over spaces, I assumed that I was to find such spaces filled with all sorts of social life that had been squeezed out of the mainstream and increasingly uneven Warsaw (Berger 2006, 31, Saksouk-Sasso 2013, Anderson 2010, Tonnelat 2008). The expectation was not just a wild guess, as economic researchers have shown that in just two decades leading to 2015, Poland has shifted from being one of the most egalitarian

[10] The tension between the urban space produced under socialism and the contemporary anti-egalitarian tendencies gave rise to what some see as hybrid spatialities (Golubchikov Badyina and Makhrova 2014).

countries in Europe to the bottom of the list (Bukowski and Novokmet 2019). The lack of efficient redistributive policies for the most part of the decades after the fall of socialism led to skyrocketing inequalities, barring many from reaping the rewards of the new economic system. In the capital of the country, this process projected itself with extra intensity, effectively keeping a section of the inhabitants from enjoying the perks of the city.

To my great surprise, I found that there has been only limited action in these so-called 'gaps', in a social sense. This is not to suggest that nothing has been going on within the interstitial spaces of the gaps. As the opening vignettes suggest, many gaps are appropriated in one way or another. However, I expected ample social life. I expected to find tiny markets there; I expected to find people, who used these spaces like restrooms, meeting places, spots to take their dog out or sell crack, as sleepover areas, intriguing game scenarios for kids or hipster hangouts, the world of the subaltern and the world that exists beyond the rules of the profit-oriented and making capitalist city. However, even in the relatively central areas, there was often not much to see. In general, my informants in Warsaw agreed with this observation, but the range of their interpretations has been a challenge to process. Some attributed the lack of social action to cold weather during the first months of my research in late autumn 2016. Others explained that since Warsaw has a scattered built structure and quite a few actual parks, such an immense amount of open green space was simply impossible to inhabit with meaningful social life everywhere. One man I talked to even suggested that the oft- unemployed working class whom he met while hanging out in such spaces simply 'moved to England' after the accession to the EU.

Taking the risk of resorting to a 'jujitsu trope' (Carrithers 2011, 322) of offering a reinterpretation of a phenomenon that flips the understanding of the interlocutors, I believe that underlying causes of such dormancy could be sought by contextualizing the recent urban developments in the city; more specifically by analyzing the largely unchallenged mode of neoliberal governance that has been present in Warsaw for almost two decades. After the shock therapy reforms in the early 1990s and a subsequent economic slump that aided the creation of many of the gaps in the city, it was the 2000s that brought in a new wave of financialized corporate capital. Poblocki suggests that this was the time when the earlier Polish "car boot sale" capitalism characterized by mushrooming of tiny businesses[11], oftentimes run on a street side, swiftly changed, accompanied by a construction boom (Poblocki 2012, 272). The scale of the development led to more stringent execution of the property rights, making it more difficult to appropriate spaces with known owners. It is also vital to understand the inherent desire of the municipality and some of the inhabitants at this time to show that Poland is a 'normal' country and

[11] This period also remains deeply ingrained in the minds of the inhabitants in the neighbouring countries of Poland. Slovaks and Czechs would organize coach trips to the sprawling borderland marketplaces, always in search of the new products ranging from clothing, bootleg audio cassettes and furniture to Polish delicacies that local traders could provide at low price. Until now, many people reiterate a stereotype of Poles as small entrepreneurs, even as the mass shopping trips became rare. As a small personal vignette, during my fieldwork I had to repeatedly explain to some members of my family that Polish-produced food and products in Warsaw come in good quality and are not necessarily cheap.

mimic the perceived ways of being western and modern. Hoping for the normal in this sense could be linked to the ideology of post-socialist 'transition' that understands the changes after 1990 as a trajectory of catching up, moving back (or forward) towards democracy, capitalism, and 'civilization' as such (see e.g. Stenning and Hörschelmann 2008, 321). Unsurprisingly, the prevalent imaginary of the desired spirit of Warsaw has mirrored the capitalist ideals of the late 2000s and 2010s attempting to model the city as a sterile safe haven for capital as well as for the upper classes. For the case of the gaps, the normal would thus stand for a well-landscaped and maintained city, where the shabbiness of both the urban space and its inhabitants would be relegated to the socialist past, showcasing the winners of the new economy in an emerging global capital.

In the late 2000s, the city hall unleashed a process of what could be called a 'beautification' of Warsaw. There is a semiotic link between waste as pathology and cleanliness as a virtue (Ahmann 2019). And consequently, waste also often gets too readily associated with unwanted people that are best kept out of sight (Reno 2015). This meant not only making the city cleaner of trash and 'unkept' greenery but also cleaning/removing it of unwanted individuals from public spaces. The ban on public drinking that has been in place since the curfew in the 1980s became more strictly policed. Similarly, small illegal market stalls were targeted and many of the legal ones had their permits removed. A friend made a comment that Warsaw from this time had the clean aura cities have under authoritarian rule – cleanliness being heavily forced upon the city. However, the inspiration for such measures can rather be traced to a wider trend initiated by Rudi Guiliani's infamous cleanup of the streets of New York and his introduction of a 'broken window theory' that eventually became a playbook for mayors all around the world wishing to market their 'world class cities' (Schindler 2014). A desired urban renaissance by some inevitably resulted in the displacement and harassment of others, and Warsaw was no different.

The often-dormant character of the gaps can also be attributed to a widespread post-socialist emphasis on the centrality of private property in everyday life and as an integral part of society (Hann 2005, 550). Linking to the aforementioned fuzzy property issues in Warsaw, it is important to understand the double-edged consequences of the fetishization of private property. On the one hand, it leads to the emergence of gaps, as the rights and titles to lots in the city are often unclear, such that formal development is kept at bay. On the other hand, such uncertainty prevents social life within them, as such areas have been fervently policed and become untouchable by anyone save the (often unknown) owners.

The resulting relative abandonment of the gaps has given rise to a very convenient situation for real estate developers, aided by the city hall, who depicted many of the gaps as useless, dangerous, and ugly, as areas with shrubbery standing in the way of the much desired 'densification' and a more compact city. Even some of the urbanist experts chipped in suggesting that even though Warsaw is a city of greenery, it is mostly not landscaped properly and remains untidy, often with trash, devastated, and with low landscape and use value (e.g. see Chmielewski 2002, 46). Even though many of them most likely

intended to tap on ongoing debates in urban ecology, nature conservation, and landscape planning dealing with 'urban wilderness'[12] instead of calling for a built up, it nevertheless fit the rhetoric presenting the new construction as the only sensible choice for the city. Warsaw has an unusually loose built structure, causing issues with provisioning of public facilities and public transport and effectively enhancing the car usage among some of the inhabitants. However, the quest towards urban density has been used to justify all kinds of projects, often destroying green spaces without responding to the above-mentioned challenges and more importantly, without taking a decisive stand against the booming suburbanisation. The approach has led to decades of "wild development" as inhabitants derogatively describe it, enabled by the virtual lack of binding planning processes in Warsaw, which has turned the city into a developers' playground. As an illustration, a number of new developments in 2008 equaled the new constructions in London, a city four times the size of Warsaw (Kusiak 2012, 302). While such a scenario was to be expected on privately- owned lots, the construction and privatization fever has also often affected publicly- owned land. In the following sections, I will explore a strategy of resistance employed by the urban activists devoted to preserving one such publicly- owned space and building on its potential commoning value (Carlsson, Manning 2010).

Gap struggles

The following section will zoom in on Jazdow, one of the few cases where urban gaps were preserved from real estate development (at least for the moment), by local activists and inhabitants. I use this case to explore how urban imaginaries of the city hall authorities were 'opened up' and redefined, where desired forms of urbanity could become a maneuvering space for the advocates of the preservation of Jazdow. The section will also demonstrate how attempting to create an open space where alternatives can be tested and imagined is an ongoing and messy process, forcing the people on the ground to carefully manoeuvre their options. In a city, harder still in a centre of the capital city, creating a completely autonomous area where all the radical ideas can be realized immediately is rarely possible[13] and the Jazdow case focuses on how the inherited entanglements and paradoxes can be tweaked and even utilized.

The Jazdow settlement has an intriguing history: it arose in the very centre of the city as almost one hundred small wooden houses that were sent to Poland by the Finnish government as part of WWII reparations. The area spans through approx. 5-hectares and is full of lush greenery. The houses are municipally owned and were conceived as a temporary solution amidst the post-war housing shortage. Some of them even became crucial for the future of the city, as they hosted engineers responsible for rebuilding Warsaw.

[12] See e.g. Rink 2009 for an overview.
[13] One well-known exception to the rule in Europe is Christiania in Copenhagen.

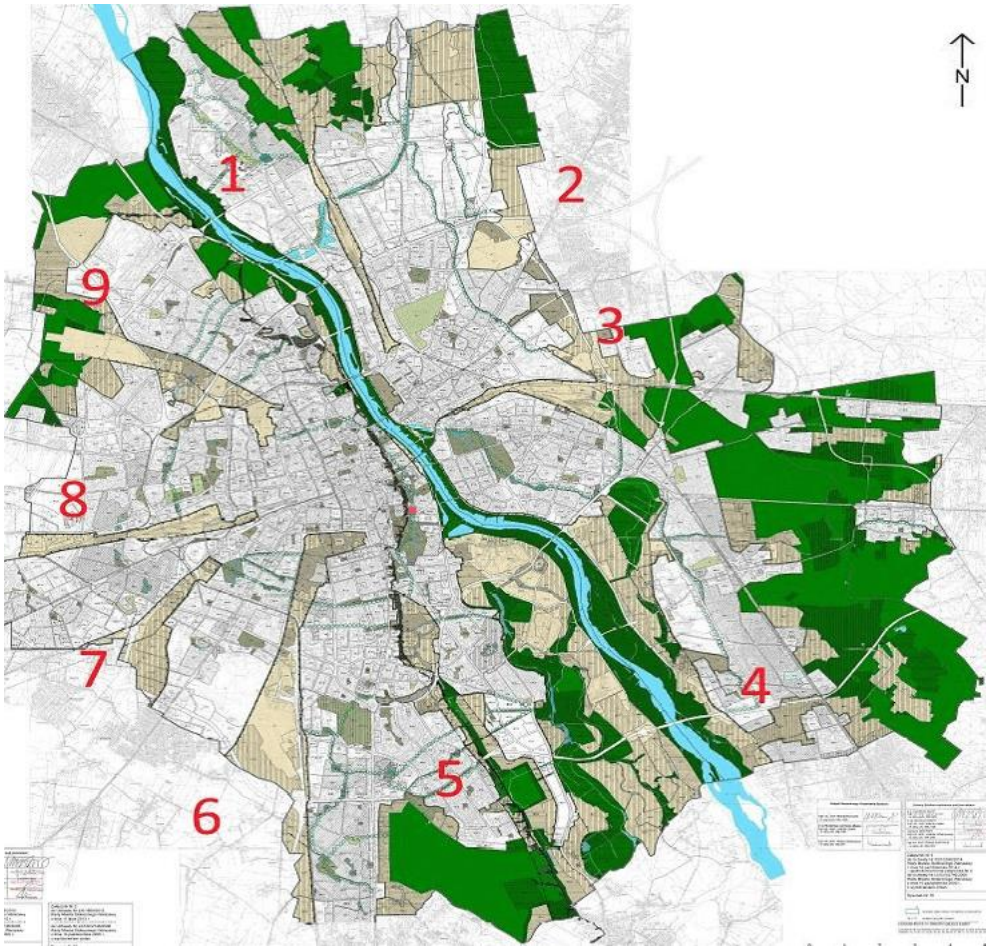


Figure 3. Green corridors Jazdow is a small red dot in the city centre (planning documents)

However, as temporary solutions have a tendency to become rather permanent, out of the original 90 houses, about 26 still stood during my research in 2017. Some of them were left empty, some hosted the remaining 25 permanent inhabitants (as the city stopped allotting the houses and the former inhabitants left or died) and some were occupied by various NGOs and activists. The settlement has undergone a slow process of dismantling ever since the 1970s, however, it took until around 2010 for the district authorities to proceed towards the complete clearing out of the area. The district mayor (representing the centre-liberal party that, in 2020, still governs at the city hall) argued that having a 'village' in the city centre is a shame, as the area was way too valuable to host overgrown shrubbery and a few shabby houses and that it should be developed for other purposes. The area truly belongs to the most exclusive ones in the city, both in terms of prestige and land prices. The Polish parliament is on the opposite side of the road from the settlement and the unique position of the settlement is regularly highlighted during the bigger protests, as the police often use the streets around Jazdow to park their radio cars.

As state power and money coalesce here, it was not surprising that the mayor's vision of acceptable functions that were also 'more adequate for the downtown' included a new Japanese embassy and a

shopping mall. Around this time, a group of citizens and Jazdow inhabitants started to organize to defend the area from development, forming an 'Open Jazdow' initiative. For long Jazdow has been a place where people could meet, have a walk and take a break from the city. The goal of the activists was to preserve the living space for the few remaining inhabitants and to keep the area open for everyone, together with its character, without overt landscaping or hierarchical organization, much in line with the Lefebvrian right to the city. In this manner, the area would continue to serve as a counterpoint to the nearby baroque park with sterile and meticulous upkeep and set visiting hours, but also challenge the notions about what contemporary urban life should and could look like. In a way, Jazdow channelled a rising resistance to an emphasis on 'totemic representations of power' (Caprotti 2019) in the city in a form of major development projects and ostentatious iconic architecture or to use Harvey's term, construction of spectacular places by raising a claim for a more humble and accessible urbanity (Harvey 1989).

What played into the activists' cards was the silent change that took place at the city hall. The liberal administration that had been in power for 20 years with only a minor break saw its approval rate plummet, especially after a far-reaching scandal connected to the restitution of public spaces and housing in the city, once again linking the case to fuzzy property issues in the city. Additionally, within Poland, the Warsaw city hall was one of the last strongholds of the once powerful liberal party that had enjoyed only very limited power on a national level, as national politics were dominated by the social-conservative Law and Justice party. The shaky position that the administration found itself in was echoed in their inclination towards experimentation with policy. As Brenner and Theodore (2002, 28) remind us, cities have become absolutely central for policy experiments and new politico-ideological projects designed to deliver changes that in reality allow business as usual to continue. Acting as incubators, they are not only targets of the policy innovations, they are the very places where the restructuring projects get tested and developed.

If the earlier rule of the liberal party could be described as full- throttle neoliberalism that left the city struggling with dead office zones and giant malls, it soon became obvious that the revanchist approach (Smith 1996) of aggressively uneven and exclusionary urban governing met its limits. In addition, the financial crisis slowed down the anticipated investments, forcing the city hall to think about limiting its spending. The city hall found one of the solutions to this conundrum in the creative city paradigm, which the city hall hesitantly adopted (see Florida 2005). As several researchers have shown, after the recession, the desire for relatively cheap 'quick fixes' across cities increased, leading to a boom in officially-sanctioned so-called tactical urbanism (Mould 2014) and 'creative' approaches (Pratt and Hutton 2013). If one way to go around to creative city policies is linked with investing in massive

cultural projects and events (hoping to reach the mythical Bilbao effect[14] (see Del Cerro 2007), the other side of the spectrum that pertains to Jazdow recognition utilizes the small local initiatives, very much in line with the imagined cultural scene of Berlin (Novy and Colomb 2013).

Based on communication and the new projects of the city hall as well as the hiring choices, it became clear that the authorities realized that to perpetuate the image of Warsaw as a cool and up-to-speed global city, the city would need a few 'alternative'-looking areas, with people riding bicycles and at least a simulacra of 'authentic' urban experiences; delivering the urban lifestyles to attract the middle and upper class inhabitants following developments in other global cities. For example, Colomb (2012) has analyzed policy shifts in urban governance in Berlin, a city that acts as one of the main sources of inspiration in Poland due to perceived geographical and cultural similarity, and even includes a discussion on the city's utilization of the urban voids in urban development and place marketing. Similar tendencies of rebalancing neoliberal development have been described in other cities around the world including the former Soviet space e.g. in an article on Moscow urban development by Zupan and Budenbender (2019) as 'hipster Stalinism', a way of rejuvenating and greening space physically, without any attempt to address deeper undemocratic rules or strategies inherent to the processes of urban development politics and planning.

In order to keep up with the 'global economy of appearances' (Tsing 2000), several well-known urban experts and activists were hired by the city hall. The newly hired consultants perpetuated the creative language following Western European urbanist tendencies (the new head architect presented a powerpoint called 'Copenhagenize Warsaw'), although it is questionable whether they enjoyed a reasonable amount of influence to push through their more radical propositions. Generally, the whole story echoed a familiar scenario of the counter-culture representatives in the urban realm being coopted by the capital-backed political representation and thus effectively silenced (Frank 1998). At the same time, however, it was undeniable that the desired mode of urbanity shifted and provided a degree of fluidity that allowed the Jazdow initiative its successful operation.

Tapping on the tendencies in the city council, the protest against demolishing Jazdow immediately took the form of 'community activation'. Besides the more conventional forms of struggle, the activists organized concerts, picnics, workshops and started a guerilla garden in order to present the space as a valuable gathering spot for the community. At the same time, they employed the language that echoed the 'creative city paradigm' and suggested that Jazdow could be an urban laboratory of a kind, highlighting cultural and social functions of the houses and the whole area. The cultural and social 'activation' was supplemented by an emphasis on memory and history of the place, highlighting the

[14] Bilbao effect (sometimes referred to as Guggenheim effect) stands for a process of economic reinvigoration of a city through a large-scale investment in cultural projects. In case of Bilbao, it was the unveiling of the Guggenheim museum designed by star architect Frank Gehry that supposedly became a catalyst for changes in the city.

role of the houses during the early days of the rebuilding process after the war (as among other uses, houses were used as a temporary centre for the new architect-urbanist group that supervised the planning of the new Warsaw). Some of the otherwise rather radical positions remained strategically under-communicated, while the activities that fitted well with the city hall agenda were highlighted. The Open Jazdow group also made sure that they had a professional and a very neat- looking visual representation of their plans and attempted to include 'respectable' organizations and experts in their propositions.

Figure 4. Jazdow (picture by author)

There is significant academic literature that shows how the creative city and participation discourse often serves as a way to introduce and justify gentrification in impoverished areas (McLean 2017, 41-42). In this line of reasoning, public activation, artistic interventions or community gardening heralds the upcoming 'cleanup' of neighbourhoods that turns them into a desirable destination for capital. The irony in the case of Jazdow is that these dynamics have curiously worked the other way around – it is a safeguard against being pulled into an already- existing government-business district with its sterile, elitist space. The discourse that the activists more or less willingly coopted thus acted as a functioning buffer that succeeded in persuading the city against development. It also ensured that the area could be kept messy and open, and created space for more radical experiments that would otherwise never take place. The initiative allowed inhabitants to take a walk, play or just chill in the otherwise expensive and highly surveilled downtown without having to engage in consumption, an option that is not so common anymore.

Using Clement's term (2004), Jazdow became a site where people could practice 'attentive observation' and approach the area as a space of pleasure stemming from its ecological richness as well as a resource

for education and advocacy. Kids could join one of the gardening initiatives. A group of enthusiasts started keeping bees, giving small workshops on beekeeping in the city. People could use one of the many saved houses to hold low-cost meetings or join barbecues. Thanks to its positioning in the direct vicinity of the parliament and other governmental institutions, the presence of Jazdow has had a dimension of spatial symbolism, very similar to the encampment at the Zuccotti park during the Occupy Wall Street protests. Materializing alternatives on the very doorstep of the state power has definitely exceeded the scale of the gap struggles and served as a reminder that a different organisation is possible (and already present). In a way, the case of Jazdow shows that even if there are rarely exceptions to the rules of the game, there can sometimes be a silver lining to urban policy shifts that have otherwise been received with criticism from the social theorists and widely seen as detrimental to urban life.

Obviously, in the case of Jazdow, the strategy also had its expected downsides. One of the common accompanying traits of the creative discourse has been a persisting casualization of those engaged in it (Vivant 2013). Activists occupying some of the houses have the consent of the municipality and enjoyed individual one-year contracts. However, for example, in 2017 the city failed to enter negotiations about a new round of contracts, leaving the occupants in a legal limbo. This led to a peculiar situation, as without a contract, there was no need to pay the (symbolic) rent, yet at the same time, the activists faced great uncertainty and suffered from the inability to create reasonable long-term plans. The municipality was thus clearly abusing the fact that the Jazdow initiatives often publicly profile themselves as loose and semi-formal groups, thus seemingly providing leeway to keep their options open. In this manner the city also hall kept its space of possibilities open, hinting that the struggle over Jazdow was still going on.

In addition to that, it was sometimes argued that Jazdow is a unique case that can hardly be replicated. The area is in the city centre and definitely attracted more attention as well as stronger emotional reactions than some of the other gaps would. On top of that, the amount of work and care that the struggle demanded only showed the possible scale of similar actions in the rest of the city and its contingent relation with the city hall and urban policies. Most importantly, as mentioned earlier, Jazdow activities take place surrounded by an exclusive area, where there is little more to gentrify. Without a careful fine-tuning for the local contingencies, a similar approach elsewhere might kick off a wave of gentrification that would not only eventually smother the ‘gap life’, but also negatively alter the whole neighbourhood. In this sense, it might incidentally be an interesting avenue for future practice – instead of reasserting spaces in the peripheral areas, it is exactly by inserting alternatives in the cores of the cities that disruption can be achieved. While possibly difficult to achieve in case there are no ‘Jazdows’ at hand, the contrast that arises as well as the community value of the area could be a great pay off. Either way, as the next section shows, the problematic creative city discourse did not necessarily act as the activists’ main weapon, as the green agenda made a recent breakthrough to the Warsovian public discourse.

Green polluted city

Besides the space activation and creative city discourse, 'gap activism' has acquired a new tool, as Warsaw has seen a sudden and somewhat surprising turn towards environmental issues. The spike was signified by an air pollution crisis that has been alarming for decades, but for various reasons only truly became a household concern during the winter of 2016-7. One environmental activist described his feelings about the sudden buzz around his work by likening his organization to a rock band that had been confined to their garage for years before getting 'discovered'. Due to the pollution upheaval, environmental concerns entered the agenda of both inhabitants and municipal governments. As a separate chapter in this dissertation will discuss, the trees and greenery became a crucial battleground in the city. In the words of Tomasz, one of the Jazdow activists, who spoke to me about the feeling of uncertainty at Jazdow and the new salience of everything linked to green city:

> "What the city actually thinks is a mystery… Nowadays, Jazdow is definitely important also thanks to its greenery. Maybe the city just does not think in 20 years' perspective. Of course, there are some long-term strategies, but see... Greenery has become a really important topic in the past year or two, a fashionable one. Smog, then Lex Szyszko (a new controversial legislation on tree felling, discussed in chapter 5), the elections are coming... I know it is just ridiculous to do politics like this, but there is no use in hiding from the fact that greenery is a topic that makes a difference."

Amid the upheaval that the authorities simply could not ignore, the Jazdow area, as well as other gaps in the city, started gaining new salience as spaces of urban reproduction, as the sensibilities of the media, as well as the inhabitants, became more attuned towards environmental issues and greenery in various shapes and forms. As such, the Jazdow case and the success of the campaign marks a completion of a shift towards the green city agenda at the Warsaw city hall. In the 2000s, it would still be rather far-fetched to accept the thesis about environmental protection as one of the ultimate post-political topics, if looking at Warsaw, but in fact at most cities in Eastern Europe (Swyngedouw 2008). Various environmental protection issues have regularly been at the forefront of fierce struggles, oftentimes clearly reflecting the political party divisions. However, the Green Capital candidacy of Warsaw, the greenery and tree controversies, and most importantly, the newly emergent air pollution crisis all contributed towards the shift that will be more closely discussed in chapter 5.

The arguments that were at hand for a long time amongst activists suddenly gained power and coverage in the public realm as well as reached the ears of the policymakers. The activists were now able to discuss how the vacant lots could vitally contribute towards urban living as well as provide a refuge for vagabond species of plants and animals (Harrison, Davies 2012, Clement 2011). They could also argue how Jazdow and similar areas mitigate urban heat island issues and even tap into urban ecology theorizations and present it as an option to be included in the official city policies, e.g. in the ongoing

Adaptcity project acting as an umbrella institution for research on resilience and climate change in Warsaw. It is a great paradox that the above-mentioned policies that had kept the gaps devoid of social action and allowed for the overgrown greenery to develop contributed to making such spaces even more valuable once urban space entered the process of slow redefinition. The pollution crisis revealed the ruderal ecologies of the gaps as vital urban spaces, finally transgressing the dated nature-urbanity duality. As I will suggest later in the dissertation, the shift in focus on the side of the authorities has been a partially calculated move in order to manage the pollution crisis and its perceptions. However, as for the Jazdow community, the move towards the green city rhetoric opened new possibilities.

Moreover, the area of Jazdow as well as many other gaps underwent a certain metamorphosis of scale. If before, Jazdow or gaps generally had been perceived as an isolated issue, recently they came to be viewed as a part of the green axes in the city and a continuation of a system of Warsovian green corridors that chapter 4 is devoted to. Almost forgotten in the 1990s, Warsaw boasts a system of 'air wedges' filled with unkept greenery, parks, cemeteries or airports, which have been in place since the war – and which are the reason behind many of the gaps in the city fabric. As nowadays the corridors were often built over, the topic of their usefulness for air ventilation rose to prominence in relation to the air pollution crisis. Within a surprisingly short time span, the loss of green wedges was singled out as a symbol of wild capitalism, where their loss should be prevented. Figure 4 shows that Jazdow is located at the tip of one of the corridors, linked to the system of public parks that penetrates the city centre. Due to such positioning, Jazdow gained an unequivocal boost in the way the legitimacy of its existence is perceived by the Warsovians. As the earlier right to the city approaches became intertwined with pressing environmental grievances, it became difficult to imagine that the city hall would move towards developing the area. Urban greenery in gaps and elsewhere gained a new political and practical salience that could not be ignored.

Develop how

The story of Jazdow is also a story of competing imaginaries of what urban life should be like and of what kind of city Warsaw is. While on the side of the city hall, there was a slow recalibration from 'develop everything' mode to more slightly more nuanced ways of reaching their version of a global city Warsaw, the activists in Jazdow tactically waited and used the newly opened cracks that allowed for successful preservation of the area. It would be easy to criticize the approach for a lack of radicalism – after all, in order to maximize capital extraction in urban areas, 'weird' and alternative spaces in the city are currently sought after by policy-makers. Olin Wright (2010, 231) concisely summed up such critique:

> "While many of these efforts at building alternative institutions may embody desirable values and perhaps even prefigure emancipatory forms of social relations, they pose no serious challenge to existing relations of power and domination. Precisely because these are

> ‘interstitial’ they can only occupy spaces that are ‘allowed’ by capitalism. They may even strengthen capitalism by siphoning off discontent and creating the illusion that if people are unhappy with the dominant institutions they should just go off and live their lives in alternative settings.”

However, after decades of tough policing as well as harmful and unfavourable policies of the city hall, the strategy could also be described as mimicking the power imbalance between the two sides of the struggle. The activists were maneuvered into carefully testing their field of possibilities before unleashing action and thus far, this strategy has been rather successful. Ahmann’s (2019) concept of subjunctive politics and affective pragmatism can be of use here. Just like her interlocutors pondering on the pros and cons of the new investment in their neighbourhood, people involved with the Jazdow community decided to engage in the speculative weighing of their options, investing their efforts and hopes in ‘futures that seem plausible’ (ibid, 330). For many months, the odds of saving the Jazdow area from development were extremely uncertain, so carefully balancing the line and starting small was possibly a pragmatic, but efficient tactic. At the same time, in the near future it will be immensely important to develop the range and scale of topics that the initiative touches on and to build a kind of a stable ‘social base’ (Harvey 2012); as such the area could eventually sustain future attacks as well as serve as a pad for other activist groups. Similarly, it might be important to continue with a simple territorial expansion to other similar areas in the city and the country – before they disappear as so many already have before them. Some of the shifts at Jazdow are already happening, in the words of Tomasz:

> “Initially, I didn’t see it as a political action. It was mostly about saving the houses. But over time, Jazdow generated new ways of looking at the city, our ambitions kept on getting bigger. Now we’re clearly saying that we want to co-govern the terrain. It’s a long way. From a reaction against an attack, we moved on towards positive activities.”

From his words, it is clear that the space itself already has a capacity to generate not only changes in individual attitudes but also facilitate networks that can support the new activities. And the range of ‘positive activities’ is extremely wide. There are as many avenues towards further use or abandonment in Jazdow and elsewhere as there are kinds of gaps. One solution may prove to be both beneficial in some ways and exclusionary or detrimental in others. While Jazdow is full of social activities and many of its sections are actually becoming well maintained (possibly stretching what could be considered a gap space), there are also advocates for (almost) complete restraint, letting the nature take its course.

In its extreme form, this is demonstrated for example in Gandy’s analysis (2012, 270) of the Parc Henri Matisse in Lille, France. Co-designed by Gilles Clement as an experimental park testing the frontiers radical environmental politics and humble landscape design, the park features a huge inaccessible island representing a ‘terrain vague’, where plants can grow freely and form a sort of a spot for scientific observation and reflection on the ‘place of nature in an urban environment’. Set in the middle of a rather

conventional park space with a lawn and some shrubbery, it is both an artistic object and an unintended reminder that gap spaces may often be unwelcoming, difficult to use, and inaccessible – even though in the case of the surrounding park, it is inaccessible especially due to policing in place. What makes the scene of the experiment even more ironic is the context of Lille, a former industrial powerhouse of France that nowadays has an abundance of gaps that do not need to be carefully recreated. By barring people from his experimental terrain vague, Clement perhaps unwittingly re-established the boundary between the natural and the social/urban that gaps normally so effortlessly reveal as a false dichotomy. And just as well, he created a space very similar to the gaps in Warsaw that are difficult to access and inhabit, physically and legally. Mentioning the story of Parc Henri Mattise leads to no clear conclusions, but shows that there is a continuum of how to approach the interstitial spaces like gaps; on the one side of the spectrum they can be conserved as a sort of a laboratory museum, while on the other, filled with interventions and rebuilt to serve specific functions, possibly being changed beyond recognition.

Conclusion

Discussing gaps and the interstitial areas in the city, this chapter explored how policy decisions in post-socialist and post-crisis Warsaw have yielded contradictory results. At different points, the imaginary of a global city in the neoliberal era and unique property relations combined with a modernist urban outline that has paradoxically led to both the appearance and disappearance of urban gaps; and while they caused a large degree of dormancy within such spaces, they also eventually provided an opening for them to be reclaimed by city inhabitants.

The Jazdow initiative exemplifies one case study of such struggles towards the preservation and rearticulation of urban gaps in Warsaw. By proposing an alternative approach to gaps, opening them up and highlighting the value of urban greenery, the Jazdow community showed that an eventual reconciliation with the goals of municipal policy-makers was possible. Jazdow achieved this through taking advantage of a policy shift at the city hall that embraced a paradigm of creative city and public 'activation'. By making use of the new approach to urbanism, Jazdow activists essentially found a tool that enabled the preservation of accessible and non-commodified areas within the heart of one of the most exclusionary and securitised neighbourhoods.

At the end of my research on gaps, I learned that in the meantime, a city run institution, the Greenery Bureau started their own survey of left-over spaces on public land they called nieuzytki, a term probably closest to the English term wasteland. At the beginning of the research, they identified 35 areas and commissioned researchers from the Life Sciences University to do the study for them, evaluating both social and natural aspects of such gaps. The researchers were supposed to look for people using the spaces as well as for the ruderal ecologies that emerged there, often on highly contaminated soil. During my interview with the representatives of the Bureau, one of the things they told me was that they 'would like to show that using and reusing them doesn't necessarily mean doing it in an economic, extractive

way…. They are valuable by themselves and even little investment could turn them into attractive spaces for people, and also they play a major role in environmental conservation'.

The times might thus be changing when it comes to gaps. Especially due to the rise of environmental concerns as a legitimate issue to be used in urban politics, the discussions about green left-over gaps received a significant boost. Spaces like Jazdow have undergone a process of recentering; the green policy making, as well as the polluted air, established them as crucial spots on the map of the city for their role in urban ecologies, facilitating social reproduction. It is now up to the community of Jazdow whether they use a chance to scale their efforts upwards towards more systemic issues in Warsaw and beyond. And the air troubles that will be discussed in the following chapter would definitely aid it.

3. The rise of air ordering

Figure 5. Warsaw downtown covered in smog (picture by Maciej Margas)

Me: Do the rich live better when it comes to air?

Ms. Owczarek: No! Why would you think that? (haha)

Ms. Owczarek, an air pollution modelling scientist at the Mazowsze Environmental Inspection[15], found my question about possible links between wealth and clean air almost ridiculous. She is passionate about her job and during our meeting, she carefully explained to me all about her work and the caveats of pollution modelling in Warsaw. She showed me the maps with pollutant distribution and took time to contextualise all the information in straightforward language. Her reaction to my inquiry was understandable; a situation in Warsaw poses an unusually 'egalitarian' case of urban air. Toxic pollutants in the air that she measures have often crossed class divisions, going against much of the air pollution studies that describe pockets of fresh air inhabited by the fleeing wealthy. As Ms. Owczarek said, 'it (*wealth*) is just completely independent of the measurements. According to her, if the issue was just about establishing scientific patterns of toxicity in the city, at the very moment it definitely could not be argued that the rich enjoy better air than the poor.

However, this chapter will argue that the story is not so simple and that hierarchies tend to be embedded deep in the social fabric. More than anything, the lack of quantitative data seems to suggest that air

[15] An official institution responsible for environmental inspection and protection in the region that includes the capital region.

pollution was a relatively new concern and thus did not have time to write itself into the spatial divisions in the city – at least not in a way that can be observed using meteorological modelling at her institution.

For a long time, air pollution in Warsaw was not considered an issue and its rise caught many by surprise, despite earlier warnings from scientists and NGOs. A simple Google trends analysis on 'smog warszawa' entry shows how the public interest in the topic exploded in late 2016. The weather conditions, especially in January later in the winter, led to longer periods with thick smog, which was easily noticeable by everyone. For days, the city was covered in grim smoke and there was a flush of information about the dangers of merely going outside. It was this climatic event that started an avalanche of activism, journalistic articles, and policy changes in the city as well as in Poland in general.[16]

For obvious reasons, and especially in a city with a flat landscape like Warsaw, (clean) air cannot be turned into a commodity as readily as land or water. It evades capture, it is not easily divisible and flows from one place to another. However, upon taking a closer look, the uneven distribution of both benefits and risks in the city cannot be glossed over.

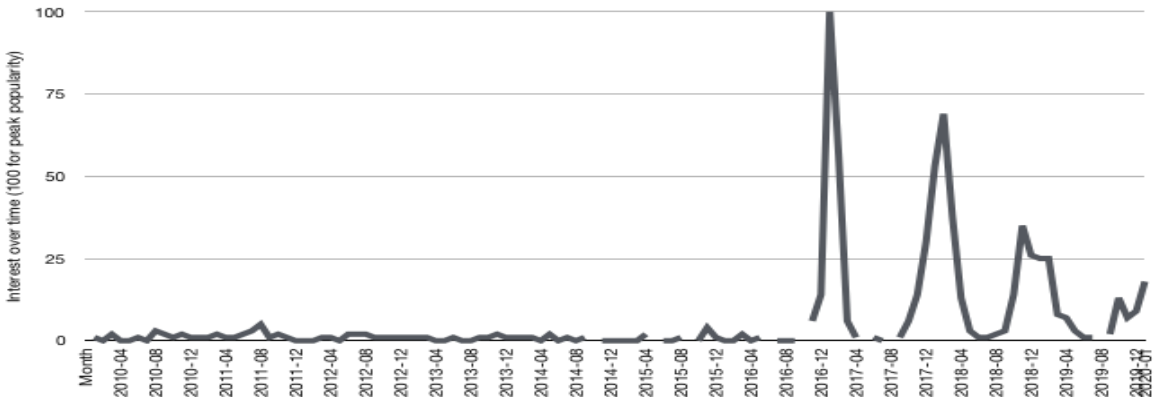


Figure 6. Google trends analysis for the term 'smog Warszawa'

Scholars of political ecology have long pointed out a stark unevenness in urban landscapes, as well as a co-determination of the environmental and social processes (Heynen, 2014, 598, Swyngedouw and Heynen 2003, 914). The 'evil infrastructures' (Kelty 2017) in the background of current pollution organize materialities to facilitate not only specific notions of public good, but also inevitably produce public 'bads'. This chapter will argue that such 'bads' come both in the form of toxins and of new inequalities. Due to the phenomena being taken seriously only in the last couple of years, some of the wealthier neighbourhoods suffer from similar or even more detrimental conditions than the poorer ones. However, the flat distribution of 'bads' shall be treated as a laboratory for the rise of new hierarchies,

[16] Such kick-off moments are often included in histories of air pollution contention. For example, Garnett (2015, 13) writes about how the Saharan dust that reached the UK in 2014 and covered all surfaces with a layer of red send dust sparked a concern of the public about the air quality. Air pollution otherwise remains out of sight, completely intangible and easily discarded. In Warsaw as well as in the UK, it was this sudden visibility turned air pollution into a tangible problem and catapulted it to the political realm.

not a static fact. Just because air pollution has not had a major reordering effect in the city until now, it does not mean that it will remain so. On the contrary, I argue that the air pollution crisis has already started reordering the environment creating a spiral of new injustices. This chapter aims to show how the new situation accelerated some processes of differentiation and introduced new ones. Importantly, it will be discussed how this specific kind of diffuse toxicity caused by a large number of small individual emitters translates into unique forms of inequalities and responses.

Aspirations up in smog

Figure 7. The first cover of Vogue Poland, February 2018.

The launch of Polish Vogue on the Polish market was a highly anticipated event, not only in the fashion circles. The magazine is associated with glamour and high fashion and Polish people were enthusiastic that it would finally have its local version, showcasing Polish designers. The very first cover however soured the release for many. The image by the German photographer Jurgen Teller featured two models posing in front of Warsaw's iconic Palace of Culture building covered in smog. The whole scene is shot in grey tones and makes use of Soviet aesthetics, enhanced by the use of a black Volga car. What was supposed to be a celebration of the new and successful Poland turned into a reminder of all the things some Warsovians would rather forget about. In a Calvert Journal essay, Pyzik and Murawski (2018) described the controversy over the cover as a typical case of a clash between the taste of the middle-

class target group of the magazine and the 'intelligentsia', who found the cover photo not only suitable but also amusing. The two authors argued that the broader Polish society most certainly does not welcome the 'poor but sexy[17] image of Eastern Europeans and prefers to see themselves as "aspirational, westernized" and glamorous; smog-covered landscapes are certainly far from that[18].

Warsaw is Poland's main economic and cultural center, which, for better or worse, has been swiftly developing in the past decades. It is a place where Poles from all over the country come to make it in life, and where expats and foreign capital arrive in abundance. The foreign press has joined in, musing about the transformation of the city, describing its prosecco sipping elites and calling the city a booming 'darling of Europe' (see e.g. Rayasam 2016) In his ethnography of Hong Kong, Timothy Choy (2011, 140) describes the worries of Disneyland managers who consider the city's air pollution to be against the image promoted by the company and pondering the future of their planned investment. In Warsaw, air pollution similarly does not fit the 'image of the company'. Sights of a smog covered downtown emerged as a threat to the story of the successful city leading the growth of the Polish economy and its citizens' living standards. During fieldwork, I repeatedly heard people suggest that it was the moral panic in the capital city that allowed reframing air pollution as an issue of national concern. There is even a joke saying that winter only arrives in Poland once it snows in Warsaw. And truly, the years-long struggles in the southern regions of the country have been considered only a local problem, far from the eyes of the policy makers and the media. It has been argued that in Poland, the city-town/countryside nexus plays a vital role as a spatial extension of the local class dynamics (Poblocki 2012, 287). If a few decades ago, it was common and widely accepted to have a professional career and be perceived as successful outside of Warsaw (and possibly a few other urban centers), currently very few people would perceive anyone moving to the periphery as an upward social mobility, even if they would occupy a better working position or have a larger house. My fieldwork experience definitely confirms that, for many inhabitants 'making it' in the capital city and being able to enjoy the perks of living in the country's core clearly represents an extension of purely economic hierarchies.

In her study on energy policy in Poland, Aleksandra Lis (2020, 26) has argued that Polish governments have often opted for a 'self-orientalizing' discourse as a strategy when trying to avoid following the EU and global climate and energy agreements. In other words, the policymakers would seek exceptions, arguing that Poland was not yet ready to take on obligations that would possibly halt the country's

[17] See Agata Pyzik's work 'Poor But Sexy: Culture Clashes in Europe East and West' (2014) for a cultural history of Eastern Europe before and after socialism, theorizing East-West exchanges and the transforming region.

[18] As a contrarian ethnographic vignette, at one discussion on air pollution that I attended, a producer of a coffee table book with pictures of Warsaw complained that when she included a photo of smog-covered downtown area with an intention to highlight the issue, a woman approached her at the opening exhibition and mused about how beautiful the picture is. "Look at the skyscrapers in haze! Beautiful, almost like in Dubai!" she allegedly said, further illustrating a deeply ingrained craving of the inhabitants for the status of a global city. It is well recognized that one of the effects of air pollution could be dramatic sunrises and sunsets that could also be sometimes observed in Warsaw. However, based on my ethnographic experience, nobody would knowingly welcome smog for its aesthetic appeal.

economic development, especially when it comes to coal usage. However, what might be deemed an acceptable tactic for Polish national policy makers, does not hold so well in Warsaw. In the city, the sudden reminder of being set apart from other major (Western) European cities has been accompanied by a sense of disbelief. This was especially pronounced on days when the citizens of Warsaw found themselves on a list of global pollution statistics mostly surrounded by cities from the global South. And, in January 2017, for one day Warsaw even topped some of the global air pollution statistics. Newspapers printed headlines suggesting that Warsaw is 'worse than Beijing', emphasizing their horror about being so far from the desired and self-cultivated image of a glamorous global city, and outcry on social media followed the suit. Sometimes, European charts would be shared instead; however, a pattern would be strikingly similar, always showcasing that Poland doing worse or just as poorly as some of the countries in Eastern Europe like Bulgaria or Serbia, eliciting similar reactions. With a grain of irony, an influential online service oko.press published an article discussing that on December 8, 2017, a day with especially toxic air, Warsaw became a smog capital of Europe,[19] riffing on the unsuccessful run of the city hall for the title of 'Green Capital of Europe'. The international pollution charts would become a staple of reporting and commenting every time the air quality in the city exceeded the norms. By constantly referring to the international air quality charts, inequality based on pollution levels gets highlighted, but also produced; effectively reflecting the boundaries between the 'clean' global cities of the North and the rest.

Mary Douglas (1966) famously theorized purity and pollution by noting that dirt is simply a 'matter out of place'. Pollution equals disorder. It disrupts the patterns of meaning that people use to orient themselves in their lives and at the same time it delineates the boundaries of those patterns; boundaries of what is deemed normal and acceptable (Douglas, 1966, 95). And since just a few years ago, air pollution was not on a list of concerns that Warsaw's inhabitants would typically deal with, the disruption caused by the smog was even more forceful. The horizon of aspirations and expectations of people is usually set up by their past experiences (Narotzky and Besnier 2014) and if the experience used to be that Warsaw is a safe and successful city to live in, a new situation inevitably led to moral panic and a feeling of disorientation, regardless of the fact that the earlier coziness with the city was only facilitated by a lack of visibility of pollution.

[19] Based on the ranking by the European Environmental Agency.

Air quality and pollution city ranking

20 October 2019, 09:12

	Major city	US AQI	Followers
1	Belgrade, Serbia	168	14.7K
2	Dhaka, Bangladesh	166	29.7K
3	Delhi, India	163	320K
4	Shenyang, China	162	18.8K
5	Warsaw, Poland	159	80.2K
6	Jakarta, Indonesia	155	1.38M
7	Dubai, United Arab Emirates	154	63.9K
8	Chengdu, China	153	858K
9	Hanoi, Vietnam	153	1.59M
10	Karachi, Pakistan	142	11.6K

Figure 8. A picture included in a report by one of the Polish radios (radiokolor.pl 2019). From the accompanying text: "Warsaw doing worse than Beijing… in Europe, only Belgrade beat us…The capital does worse than Chinese cities well known for smog."

Whatmore (2009) describes such moments as knowledge controversies; generative political events stemming from disruption and allowing for new reordering. Among other things, the process serves as an interesting reflection on the semi-peripheral position of Poland, a country that shifted from suffering from environmental degradation stemming from its own industrialization project to one stemming from the results of the cultural and social phenomena linked to the post-socialist transformation. The case provides for an analysis of an aspiring country that has not outsourced all of its environmental risks elsewhere over the course of its development during socialism as well as now.

The mode of crisis can overhaul usual temporalities, erasing context and histories that would otherwise be present[20] (Holmes and Castaneda 2016, Ramsey 2019). During the 'pollution years' in Warsaw there has been a perfect mix for just that, as a sense of urgency got combined with the abstract numbers representing air pollution levels. The new focus on the problem facilitated a sort of a tunnel vision, with policy makers, but also many Warsovians, accentuating the problem at the abstract level, glossing over the material pollution infrastructures that have been at the root of the issue; and that have been easy to leave aside while aspiring for the global city status. However, pollution is inevitably just a proxy of larger processes that cannot be assigned a simple numerical representation – counting the dust particles together with the scientist from the beginning of the chapter might show a lot, but it may hide just as much (Shapiro et al 2017, 581). In order to understand the bundle of relationships that stands behind air

[20] As argued using the case of the European refugee crisis (Holmes and Castaneda 2016)

pollution and response to it, it is important to take a step back and look at the characteristics of pollution, exploring the various scales that come to play.

Cars and coal troubles

The story of air is clearly a story of human activities, with pollution as the result of the lifestyles of modern industrial societies, as much as of urban lifestyles (Sloterdijk 2009, 88). Ever since the beginning of the industrial revolution, modernization has almost inevitably produced landscapes that are bound to bring 'disease' (Nash 2006, 150-151). In Warsaw, approximately three thousand premature deaths in the city are attributed to air pollution every year[21] and many more suffer the consequences in the form of lung and circulatory diseases. The stories of how the 'diseased landscapes' and environmental crises come along are never straightforward. However, they are always bound by being undeniably social and embedded in local histories, whatever their scale is (Neumayer and Plumper 2007). In this section, I will focus on such histories as well as the more contemporary processes that shed light on what might stand behind the air crisis in Warsaw.

During the regime change period, a significant section of the Polish territory was suffering conditions that could be perceived as an outright environmental disaster[22]. And even though the dramatic scale of industrial pollution had been alleviated (by both stricter regulation and disintegration of the old industries), new risks appeared, facilitated by the development of automobilism and continued support for the coal mining industry and coal boilers in individual houses (Holnicki et al. 2017). In relation to air, the large-scale industrial pollution was thus almost completely replaced by so-called low emission, i.e. emission of toxic substances from below 40 meters, oftentimes originating from a large number of small emitters. This section will be devoted to examining what this shift towards small emission means, going beyond a simple crunching of the pollution numbers. Although much of the abstract data might tell us a lot about the chemical composition of toxicities in the air, they inevitably fall short of describing the social conditions in the background. Urban natures are not neutral and urban pollution even less so. In the following sections, I will map out the characteristics of the pollution and analyze the process of codetermination between the diffuse toxicity and its effects in the city. Special focus will be paid on highlighting which groups get silenced and which groups are blamed along the way, with whole communities becoming antagonized in the process.

[21] An estimate made in an ethnographic interview by Dr. Artur Badyda, a Head of the Laboratory of Environment Quality Research at the Warsaw University of Technology.
[22] The environmentalist movement was one of the strongest opposition currents in socialist Poland. Among other things, their activity pushed for incorporation of principles of sustainable development in the Polish constitution.

The main culprits of Warsaw's pollution can be found in the country's love for cars and coal, both carrying cultural significance and symbolizing independence and freedom.[23] There have been studies showing the centrality of automobiles in many post-socialist countries, often linked to conspicuous consumption as well as male identity (Morris 2018, Bole and Gabrovec 2014). In Poland too, having a car or more recently, using cars[24] to get around, has become an important status symbol. Warsaw's inhabitants own approximately twice as many cars as the inhabitants of Berlin (Smoglab 2016). This commonly cited comparison is not without irony, as the Polish market has been flooded by used cars (mostly) from Germany ever since the EU accession, making the automobile dreams of Poles significantly more accessible, but also underlying the uneven relationships among countries within the bloc, with the new member states serving as a market for unwanted products. After the recent announcement of future regulations on diesel engines in Germany, the supply of such cars in Poland has gone up and the prices decreased even further. Mirroring the prominence of car-induced pollution in most cities in the global North (Molina and Molina 2004), traffic is responsible for the estimated 60-80 per cent of the air pollution toxins in Warsaw. And, counter-intuitively for some, the pollution is not predominantly caused by the fumes, but by the dust from the roads and mechanical wear and tear of the cars, such as from breaking system and tires (Badyda 2017). In other words, unless the number of cars, car speeds, and the general amount of roads and road lanes decrease, it is unlikely that the situation could be improved by measures such as widespread adoption of electro cars or other improvements to the exhaust systems' technologies.

In addition to the local car owners, about half a million cars are assumed to enter Warsaw city bounds every day from the surrounding areas (Dybalski 2017). The everyday influx of vehicles is a result of the unregulated suburbanization process that the city has not really opposed and partially has not been able to oppose. It is especially here that one can witness attempts towards appeasing the aspiring middle class. Thousands of families have moved to the suburbs not only to fulfill an ideal of a single-family house but also due to the inability to afford reasonable housing in the city with ever-rising prices and a low quality of apartments (see Springer 2013, Kajdanek 2013). As such, car mobility is often their preferred option, as the public transport has not efficiently served the sprawling suburbs in a way that is currently done by cars.

The second dimension of pollution in Warsaw is linked to old heating systems and the burning of low-quality fuels ranging from coal to outright trash. There is an old popular saying that 'Poland stands with

[23] Hanasz (1999) describes how especially in the early 1990s, cars were often perceived as 'engines of liberty', both personal and ecomonic.

[24] During my fieldwork, I have noticed an increasing number of people, who fully embraced the new Uber-culture and used 'ride-sharing' platforms as their sole or almost sole form of transport in the city. This is also facilitated by the fact that due to a lack of regulation and pervasive labour exploitation, services of such companies are so cheap that calling an uber for three or four people sometimes matches or even beats the price of the public transport service.

coal'[25]. The country is the 9th largest coal producer in the world, even though the number of miners employed in the industry fell from almost half a million in the early 1990s to less than hundred thousand (BP Statistical Report of World Energy 2018, 38, Popkiewicz 2015, 169). Coal is often perceived as a matter of national energy independence from political agency coming from both East and West. Even during the COP24 climate summit speech in Katowice, the Polish president unapologetically announced that the country would not abandon coal in near future. On one side, coal has been seen as a safeguard against dependence on Russian gas (Lis 2020, 51). The Ukrainian gas crisis in 2009 only reinforced the notion that the Russian government is not to be trusted and got embedded in an already common Russophobia among the Polish elites across the political spectrum. On the other side, the current socially conservative government has also portrayed green energy technologies as running on foreign technology, mostly German and French, and facilitating new dependencies. It is especially here that the semi-peripheral position of Poland is pronounced; it is an aspiring country attempting to ensure a degree of energy independence yet does not have the capacity to produce new technologies that would at least partially offset the imminent end of thinning coal resources. In his book Carbon Democracy, Mitchell (2011) suggested that the energy regime production continues to be overlooked, despite being the very basis of political systems in a contemporary world. The geopolitical projections of the coal hidden under the Polish territory underline that. Despite severe environmental, as well as economic costs, the craving for energy independence together with powerful coal lobby and the conservative government ensure that the mines remain open (Kundzewicz, Painter 2018).

Approximately 70 per cent of single-family houses in Poland use coal for heating (Popkiewicz 2015, 134). In Warsaw, a considerable amount of pollution is emitted from such single-family houses in the suburban communities, as well as in the residential areas within the city limits with old heating boilers. Even though Warsaw boasts a large-scale public heating infrastructure, there are significant parts of the city that have not been included in the system. Until 2018, there was virtually no regulation[26] on the quality of coal and furnaces used for heating. Many cash-strapped inhabitants thus resorted to burning the cheapest and the most harmful types of fuel[27] and sometimes opted for burning trash or old

[25] In Polish '*Polska węglem stoi'*.

[26] There have been warnings by the Supreme Audit Office noting that all other countries in the EU have some sort of regulation on what kind of coal can be sold as soon as in 2000 (Popkiewicz 2015, 144). Nevertheless, stricter regulation banning selling the mining waste (coal powder) as fuel only came in effect in the summer of 2020.

[27] The coal-products are often coming directly from the heavily subsidized Polish mines that simply use an opportunity to make some money while disposing of all the material they would not be able to sell elsewhere. The scale of brown coal usage among the population is extraordinary even in the global scale. Brown coal is known to have lesser quality than black coal, emitting high amounts of sulphur and other toxins during the combustion process. It has also been fully legal to sell culm (coal dust), normally considered a waste by-product of mining activity that is completely unsuitable for combustion due to high emissions of dust, heavy metals as well as energy needed to overcome large content of water, even more so in non-specialized boilers that people have at their homes (Popkiewicz 2015, 135).

furniture[28]. Burning wood, often in the fireplaces, has also added to the pollution mix with the cancerous benzopyrene released during combustion. A representative of Warsaw Smog Alarm, an activist group, suggested that approx. 3 million tons of trash disappear in Poland every year and even though nobody knows for sure, it clearly ends up burnt for heating in individual homes. In some parts of Poland, there have even been incidents of sorted out plastic trash disappearing from the collection points, most likely for heating. The reason why people opt for such low-quality fuels is often linked to a lack of funds to keep their homes sufficiently warm. According to the study by the Institute for Structural Research based on data from 2016, 12 per cent of Poles suffer from energy poverty (Rutkowski et al. 2018). Even though the times of men toiling in life-threatening makeshift coal mines called biedaszyby[29] in the south of the country just to make ends meet are gone, there is a large number of people who struggle with their monthly energy payments.

Smog drone is on its way

Non-human materialities are tightly intertwined with all political life and the specificity of the matter *does matter* (Collier 2011, Bennet 2010, Braun and Whatmore 2010, xxix). As follows from the previous section, one of the key characteristics of the 'materiality' of air pollution in Warsaw is that even though it is a result of larger processes, at the lowest level it is actually caused by a large number of individual emitters, either via traffic or via heating. The tiny dust particles that add up to pollution or smog cannot be authoritatively tracked back to emitters, they are free floating and very much anonymous. It has been exactly due to the diffuse nature of the non-point pollution that has acted as a potent catalyst for the commonplace individualization of the blame, directly shaping the kinds of responses that the authorities opted for[30]. The individualisation of responses or the 'do your bit'

[28] A future research would be needed on the meaning making in relation to burning substandard fuels. For example, Cupples et al. (2015) explored how insistence on heating with wood and open fire in Christchurch has an important cultural significance linked to masculinity and pioneering ethos. From surveying similar cases in Slovakia, I have observed that especially among elderly inhabitants, burning trash is a form of adherence to 'circular economies', as throwing out something that could be utilized for heat would be considered unnecessarily messy and possibly almost morally wrong. During my time in Warsaw, nobody I spoke to admitted to burning trash, but a commonly shared anecdote is that many households have their daytime and nightime burning 'regimes'. The better and legal fuel is reserved for the day and trash and low quality fuel for the night, when nobody can spot the dark smoke coming out of the chimney.

[29] Tomasz Rakowski gives an in-depth account of former miners striving to keep their livelihood by sticking to coal mining in a ruined post-industrial landscape during a drastic economic downturn in the 1990s. The illegal mines/pits called biedaszybi (literally stands for 'poverty shafts') became one of the sad symbols of post-socialist transformation in Poland.

[30] In his work on plastic particles in the ocean, Libroiron (2016, 91, 103) shows myriad ways in which it is important to locate matter in social systems, but also how its properties have a direct influence on action. He explores how representation of the plastic in the ocean shifted from being described to the public from first as a floating island, then confetti, and more recently as smog or miasma. Reflecting on such different dimensions of marine plastic materiality and their cultural images, Libroiron investigates the far-reaching implications this has for activism and policy. Similarly, in Warsaw it is crucial to pay attention to the properties of air pollution and the ways in which they get caught up in socio-cultural configurations.

mentality has often been used as a strategy to shift blame from corporations and state elites towards the citizens and to contain collective struggles, especially so in the field of environmental or climate policy (Maniates 2001, 14). And without a specific larger polluter such as a factory to blame and mobilize against, falling into a trap of assigning responsibility to chosen (but definitely not all) individuals has been at hand.

There has been a hierarchy of who is to be blamed and who is to be left alone. City hall has been reluctant to restrict passenger cars in any way and even invested in several road-widening and costly underground parking projects in the city centre in the past years. Activists calculated that if the costs of all the pre-approved parking projects would be channelled towards replacing the old heating systems, all the harmful boilers could have been completely disposed of (MJN 2020). Most squares in the city continue to serve as parking lots and major crossroads instead of being used as spaces for pedestrians. It was also common for me to hear from officials that nothing will be done about the car traffic before the elections (with the 'before the elections' period seemingly stretching for years), as the 'drivers', as they are usually referred to, are generally considered to be an influential and easily bewildered group of inhabitants. In our interview, Maciej, an anti-pollution activist linked the magnanimity towards the drivers with a class dimension, yet with a local twist. He explained, that especially after 2000, there has been an urge in Poland to create the best possible environment for 'businessmen', a new group that mirrored the aspirations of the city. And since individual automobility has been linked with the new character of a successful entrepreneur, it would be prioritized in the urban space. Unquestionably, there has also been substantial investment in renewing the public transport fleet in the late 2010s. However, the introduction of new separate bus lanes that would allow skipping the jammed traffic has been very slow and the overall amount of connections available has not significantly increased, despite the fact that the number of people who rely daily on public transport is twice as high as the number of car users (Barometr Warszawski 2018).

While 'the drivers' and traffic congestion remain out of the picture, using substandard coal in the cheap furnaces, derogatively called 'kopciuchy', which could be freely translated as smoke-boxes, have been widely vilified. Initially, this also had a spatial dimension, as the city hall pushed a narrative that it is only the coal and trash burning on the outskirts beyond the city limits that cause the smog and therefore there was little to do about it. Needless to add, this explanation both reflected and reinforced the notion that Warsaw and its inhabitants cannot possibly be held responsible for the smog fits – reflecting and reproducing the position of the city on the top of the spatial hierarchy in Poland. And with air pollution being largely invisible, it was not an impossible feat to pull with a bit of data tweaking, for some time at least[31]. After accepting that burning also takes place within the urban limits, it would be claimed that 'it is a matter of educating the people' and 'changing the mentality' by both some of the activists and

[31] See chapter 3 for analysis of pollution data and visibility in the city.

the officials. The education trope suggests that coal or trash burning for heating could be alleviated by increasing environmental consciousness, disregarding the widespread energy poverty that lower income inhabitants face. And possibly, even more importantly, disregarding that cheap coal has been supplied to Polish homes for decades thanks to large scale governmental support for the coal mining sector; directly and indirectly foreclosing development of other heating alternatives. It is partially true that Warsaw authorities have not been in charge of the national framework policies regarding coal and energy. Coal blaming thus conveniently removes the onus of responsibility and moves it on national government (formed by a rival party) as well as shifts the attention away from what Warsaw has very much been in charge of, namely the traffic and local heating systems.

While the city eventually proclaimed their commitment to providing substantial funding to boost pollution alleviation, activists were quick to note that there are too many contradictory actions and too much reluctance to take the authorities' commitments seriously. The boiler exchange program in Warsaw started in 2017, but it has been criticized for its limited scope[32], as well as for being more likely to provide funding for the middle- and upper-class residents, who could otherwise well afford the replacement using their own means and who simply used the chance to save some money thanks to being more savvy with bureaucracy. Either way, only 216 inhabitants were granted a subsidy in the first year, a miniscule number given that the estimated number of old heating systems in the city is 16 thousand (MJN 2020). For example, not only there were still more than 1500 old and harmful heating furnaces in the municipal houses maintained by the city waiting to be replaced in 2019 (Jedrak 2019), but the city even purchased some new low-quality furnaces for their dwindling social housing stock in the past years. Similarly, further expansion of the central heating system has been very slow, largely due to the fact that the heating company was privatized and has had little interest in building new connections without receiving significant subsidies from the city.

At the same time, passing measures against comparatively wealthier homeowners and their fireplaces would rarely be even mentioned as an option. A vignette from my fieldwork could illustrate how contentious the fireplace issue could get. I attended a town hall event at a wealthy suburban municipality. Local pollution activists backed by the mayor advocated for issuing a provision limiting fireplace usage on the days when air pollution in the area would exceed certain levels. The activists prepared a simple presentation showing that in the municipality in question, it is actually the fireplaces that cause the most harm and that all pollution in the area cannot be blamed on the surrounding, 'less disciplined' and poorer villages and towns. As a response, numerous inhabitants, who disagreed with the proposal, threw what can only be described as a tantrum, visibly upset that anyone would attempt

[32] In 2019, there has been news stirred by one of the environmental NGOs that pointed out that not only the number of substandard boilers does not significantly decrease, some neighbourhoods even saw a biannual rise. The authorities tried to defend themselves by saying that the discrepancy is due to improved statistical surveying and promised swifter action in the future (Jakubowski 2019).

to touch their ‘legal’ and ‘EU certified!’ fireplaces and the right to burn wood for a bit of domestic romance whenever they please. The proposal did not pass. On the other hand and in very different homes, when the owners of low-quality boilers heat with legally purchased coal that similarly has not been banned in the country, they are labelled as uneducated or ignorant for doing so; revealing the hypocrisy of double standards.

Figure 9. A meme ‘Smog policy of the City Hall in one picture' by urban activist group Miasto Jest Nasze (‘City Is Ours’). The upper part: “Propagandist billboard suggesting that air quality is getting better” and the bottom one: “A traffic jam of cars entering the city. Their number has been dramatically rising in the past years.” (MJN 2019)

While the discussion took place out of Warsaw city bounds, similar issues relate to the city territory itself. With an unusually loose built structure, there are large low-density areas with single family homes. Just like in the suburbs, many families have opted to move there with a vision of living ‘closer to nature’ and ensuring a good environment for their children, while enjoying the advantages provided by the city. Some of these newcomers became very active in anti-pollution struggles that would effectively be waged against their old neighbours heating with coal. It was here that the class fault lines would be revealed most clearly, as the ‘established and the outsiders’, to use Elias’ language (1965), had very different expectations about how suburban living should look like. Some of the newcomers would not hesitate using classist language, shaming the locals for their backwardness and unwillingness to change their ways, complaining that the burnt stench in the air is not what they expected when purchasing a property.

"A neighbor is burning plastic trash – smog drone is on its way, right away!" goes one of the winning verses by a schoolkid in Otwock Environmental Workshop Competition. Just outside Warsaw, the authorities organized a competition for the best poem/slogan for the kids at a local school. One of the winning entries speaks volumes to how not only authorities but also a large number of inhabitants approach the struggle for alleviation of air pollution (the police using drones to perform checks on smoke coming from chimneys is actually a thing). In 2020, almost two thirds of Poles approved of calling police on one's neighbor upon seeing suspicious smoke coming from their chimney (Sliwowski et al. 2020, 25) and many municipalities even rolled out special cell phone apps that would allow notifying the police with a few clicks. Besides the obvious dimension of securitization of environmental issues and subsequent increased policing directed at the citizens often suffering from poverty, the trend points to how detrimental handling of the pollution crisis can be to the communities. Instead of forging coalitions of solidarity, overly focusing on burning coal and old boilers has led to quarrels, prosecutions, and further disenfranchisement of the poorer inhabitants.

The aim here is not to argue that the burning of low-quality fuels of all kinds in homes should not be addressed. However, at the moment, the framing of the measures not only cements the already uneven power-relations among various groups in the city but exacerbates them by disproportionately focusing on only one of the pollution sources. It is certainly easier to fly drones above smoking chimneys than to overhaul a transportation system in the city. Fireplaces, as well as having a passenger car have been a part of an image of a successful life, very much unlike the literally dirty, coal powered heating. In addition to that, while the transportation system is primarily a responsibility of the city, the larger energy policies have been formed at a national level, allowing the municipal politicians to shrug off the car-induced pollution while hitting hard at coal- burning households. If increased car usage in Warsaw would be perceived as an inherent sign of the city's development and fireplace ownership as one of the symbols of a respectable middle-class lifestyle, recognizing the harm they cause touches on the pre-existing notions of a good life in Polish society. Now, when they are all revealed as the sources of pollution the city has been suffering from, the new hierarchies of blame simply mirror the established value patterns. [33]

'Clean air – our shared concern'

During the crisis, the biggest anti-pollution groups became household names, as they not only organize events and protests but are also frequently asked to comment in the media or give talks. Polish Smog Alarm, represented by 'Warsaw without Smog' as well as Warsaw Smog Alarm (two different

[33] During my fieldwork, it became clear that this victim blaming strategy was rather effective, as many people in Warsaw truly believed that coal and trash heating is the sole problem that needs to be addressed (as it in fact is the case for most areas in Poland, but not in Warsaw).

organisations after a fall out in the leadership) and Green Mazowsze are among the most prolific NGOs dealing with an issue of air pollution known to the public and policy-makers. One of the shared links in the work of all of these groups is that their representatives as well as many others in the pollution activism world strongly believe in providing what they call 'apolitical' expertise and information. Over and over in the interviews, I would hear representatives of the groups assert that they are decidedly a-political, trying to bring attention to the topic and fight for inhabitants' wellbeing without engaging in political struggles.

In a way, such an approach could be straightforwardly linked to emergence of the post-political movements that focus on consensual, expert-driven reforms rather than have ambitions to question the ruling structures all around the world (Swyngedouw 2014, Mouffe 2005). However, a simple post-politics label would do a disservice to the empirical diversity on the ground. Candea's (2011, 14) intervention into the post/anti politics debate could be used for guidance on interpreting the insistence of 'apolitical' work among the activists. In his study of the Corsican education system, instead of proclaiming that everything is political alongside the dominant scholarship of the past decades, Candea decides to 'take seriously' his interlocutors' insistence on upkeeping a division between what he calls 'pre-political' space of school and politics. The line between the two realms might be subject to constant negotiation, but the delineation of the non-political remains a crucial and co-constitutive condition of political action.

Taking seriously the activists in Warsaw, there are two notes to consider in the analysis. Firstly, the proclaimed 'apolitical' nature of their activities must be linked to a common understanding of 'politics' in a narrow sense as linked to electoral procedures and campaigning. And secondly, being ostentatiously 'apolitical' in this sense can in certain ways be an effective tactic to bring the pollution agenda to a range of policy makers that would otherwise stay out of reach (especially in national struggles with offices everywhere beyond urban centres held by the conservative party). While initially, pollution activism in Poland as well as in Warsaw was viewed as a uniquely left-wing if not almost socialist, it eventually, albeit hesitantly, got adopted by many right-wing and conservative politicians too. In conversations with the pollution activists, this was always welcomed as a major victory they would mention to illustrate how successfully air pollution got established as a matter of general concern, not a partisan claim. Some would even see it as a form of 'civilizing' the discussion, providing examples of both left- and right-wing parties elsewhere in Europe taking on environmental protection agenda.

Linking the argument back to Candea's thinking (2011, 10), for the activists, enacting the separation between the political and the 'apolitical' may be a crucial prerequisite to pursue their political goals.[34]

[34] Using a slightly different lens, the current situation could be compared to the activist scene of the 1980s all around the CEE, with an intriguing circle drawn in the lifespan of local activism. As the 1980s movements realized, environmental activism is one of the topics through which it continues to be possible to launch systemic

In their work, stirring the public and politicians' attention as well as providing information about pollution comes before the political deliberation and is viewed as its precondition. Dismissing the stance as a result of a sort of succumbing to the anti-politics machine would therefore be glossing over the complexities on the ground. Yet, as a consequence of being 'apolitical' and avoiding directly linking the struggle for better air with political demands, there is a significant space left for policy-makers' discretion on how to go about with their measures.

The characteristic of local air pollution, with many small emitters instead of a large industrial enterprise, means that there are no easy solutions and no easy targets such as a one major factory that could be held responsible. In such a scenario, it is crucial to make sure that the anti-pollution measures with implications for the people are not discriminatory. In other words, struggling for the just process while achieving the goal can be just as crucial as the goal itself. And as the previous section demonstrated, the responses to the crisis are influenced by a wide range of considerations that by far do not remain informed solely by the mythical expert knowledge. Instead, they are firmly aligned with the political leanings of the municipal and state representatives, who have missed no opportunity to scapegoat the more vulnerable citizens while mimicking fervent anti-pollution activity. By semi-intentionally vacating the space that could be used for highlighting inequalities standing behind the crisis, as well as

Figure 10. 'See what you're breathing!' Day 1 vs Day 14 of the 'Breathing Lungs' located in the city centre. Campaign by Warsaw Smog Alarm

critiques of government and policies, by raising seemingly 'apolitical' grievances. In a deeply divided Polish society and with rising illiberal tendencies of the government, environmental movements could be one of the available avenues where contention can be raised efficiently.

the unevenness of the proposed policies, the most influential activist groups are often shut away from the political discussions and engagement with the underlying issues, such as energy poverty or the class dimension behind the reluctance to reform the urban transportation policy.

Another vital feature of the local pollution activism could be identified in the strategic highlighting of smog as everyone's shared concern. One of the successful campaigns in 2017 featured brightly coloured 'cigarettes for kids'. The urban activist group and one of the few openly political organizations dealing with smog City is Ours standing behind the campaign temporarily rented out a store and ran online advertisements for the supposedly new tobacco product. Some people really bought into the mystification and within 24 hours' time, condemnations were pouring in. Only afterwards it was revealed that the aim was to attract the inhabitant's attention to the fact that in effect, kids in Warsaw inhale approximately the same amount of toxins as if they smoked one pack of cigarettes per week. Another widely talked about campaign by Warsaw Smog Alarm featured a huge prop of lungs made of the white fabric positioned in the city centre (incidentally in front of the Children's Health Centre). After a few days in the open, the white colour turned into greyish-black, demonstrating the amount of pollution that inhabitants' bodies have to deal with solely because of breathing.

The two examples serve as good illustrations of the kind of activities that often take place in relation to air pollution activism. Their strength lies in pointing out that all the inhabitants, including the kids, are suffering from exposure, suggesting that pollution is a shared problem that one cannot hide from. This has proven to be an exceptionally efficient tactic in raising the awareness and making the issue relatable for everyone. However, it is exactly this strength that also contributed to a great amount of abstraction and generalization of the topic, while the causes as well as remedies to the situation have been far less general. Prevalent framing of pollution in this manner carries a danger of erasing the context and the nuances that stand behind the toxic air in Poland. The potential trap echoes the now commonplace Anthropocene critique – pointing a finger at the entire species' responsibility for the climate change certainly contributed to the stellar career of the term. However, at the same time, the sweeping blow at humanity glosses over inequalities in both the production of the crisis and over who is disproportionately suffering from the consequences now and in the future (Malm and Homborg 2014). It could even be argued that when an issue is presented as an overtly general one, the range of very particular fixes becomes a bit like a menu that policy makers can interchangeably choose from; always aiming for the solution of the big issue in the distance. In effect, the space for raising doubts about whether and why some measures are taken before others becomes significantly diminished in the political process, despite the activist groups' often well prepared and argued action points.

A minor, yet illustrative avenue for smog activism that appeared among the more well-off and specifically for this case among celebrities took the form of judicial activism. Famous actors and writers led the pack and started suing the Polish state for failing to ensure their environmental rights and personal wellbeing, followed by a larger class action that everyone was invited to join after paying a

symbolic fee. After initial failures, some courts ruled in favor of the complaints, granting them financial retribution that would be eventually given up for charity. Since the trials have been closely followed by the media and the people involved are often well-known in Poland, the judicial procedures have had some effect in keeping air pollution on the minds of the people. At the same time, they have mostly been treated like celebrity news, and few inhabitants I have talked to considered the whole endeavor a useful tool in the overall struggle. Additionally, after one actress who initially sued both the state and the city of Warsaw met with the newly elected Warsaw mayor, she decided to withdraw her petition against the city, claiming that he managed to persuade her that swift action would be taken. The decision to target the conservative government but not the liberal mayor (whose very own party had failed to pass meaningful measures for years) not only reflected the political leanings of the petitioners but, by extension, fell in line with the commonplace blaming of the state and the Polish periphery for the pollution.

The pick and choose dimension of the activity could also be illustrated by an interaction during a public discussion attended by the petitioners. One member of the audience, an activist for an NGO dealing with air pollution, provocatively asked the panelists about what means of transport they used to arrive to the event that night. It quickly became obvious that most of them came by car, even though the writer

Figure 11. Cigarettes for kids. 'By breathing Warsaw smog, your kid inhales an equivalent of one pack of cigarettes per week. Let's do something about it!' Campaign by City is Ours

who organized the meeting lived in the vicinity of the location. Visibly uncomfortable, he explained that he would not normally do it, but he was out of time. Another actress present defended herself by saying that walking or cycling in Warsaw is actually harmful for one's health and she would opt for that once the air gets better. The aftertaste of the meeting was clear – elite lifestyles are not to be touched and pollution is always produced by others. As an activism tactics, judicial activism has been criticized for dangerously narrowing the issues into confined legal battles and sometimes even hampering wider political progress (Shaw 2013, 228). The elite efforts in this case surely contributed to the visibility of

the topic in the media but refrained from taking the extra step and formulating calls for systemic changes that would move beyond (indirectly) blaming the owners of the old heating systems.

One thing that can be clearly identified is the middle- and upper-class background of the anti- air pollution activists. In a way, it reflects the activism landscape in Central Eastern Europe, as it is mostly the middle classes that have enough time and resources to engage in organized urban struggles. As it was suggested earlier, the rich are still not necessarily better off than the poor when it comes to air quality in their neighborhoods. There is nowhere to hide from the air pollution and every breath people take is poisoning them, but also 'poisoning' their urban experience and expectations of a good life. It is especially the latter that provides an extra impetus for mobilizing, as people feel they are fighting for the elementary wellbeing in their city. The issue of middle-class bias in air pollution activism has been interestingly described in Veron's piece on Delhi (2005). He shows how the strive for beautification of the city and attempts to make the air cleaner take a form of displacement, not only of pollution but also of the urban poor and activities that allow them to go about their daily lives. Air pollution activism in Warsaw cannot be accused of doing the same. However, as the section suggested, the consequences of some of the choices made by the largest activist groups can in effect fail to avoid detrimental repercussions on the more vulnerable citizens. People economically struggling in their everyday lives surely do care about the air pollution just as much as the middle- and upper-class inhabitants. However, more often than not, they have little time and resources to deal with the slow violence of air pollution. The tangible problems such as being able to pay the bills get priority over the intangible ones that most feel they can do nothing about anyway. And in a situation of a prolonged stasis and a lack of will to address the core issues, with air pollution levels in Warsaw remaining more or less the same year after year, the seemingly general never-ending struggle almost inevitably touches the more vulnerable groups.

Buy your health

One of the ways in which Warsovians responded to the new pollution anxieties could be identified in the rise of green consumerism. Already in 1992, Ulrich Beck (1992) suggested that as individuals feel threatened by toxic materialities, they would occupy themselves with trying to limit the omnipresent risks, especially if they feel that public institutions are unable to address them. He elaborated that the most common way people would go about dealing with the risks would be by shifting their attention towards a (uncertain) protection through consumer choices. By purchasing protective technologies and products that should alleviate the effects of toxicity, the otherwise overwhelming issue of air pollution becomes simplified to a more manageable scale; the individual consumers can once again feel in charge of handling the problem. As Isin (2004, 226) argued, trying to buy one's way out of toxic life is linked to 'soothing, appeasing, tranquillising, and, above all, [self-]managing anxieties and insecurities.'

Living in Warsaw, accumulation by restoration (Huff and Brock 2017) through the new air pollution market has been on the rise. The companies jumped on the bandwagon and rolled out numerous greenwashing campaigns, sponsoring 'moss walls', pollution-filtering mega billboards, and similar interventions/wannabe fixes. One activist commented on the trend by suggesting that 'people believe many things', sometimes bordering on magical thinking; setting a moss wall against years of neglect and presenting it as a part of a solution. The individual consumers would be extensively targeted by a range of new anti-smog consumption options. In my local gym, the screens featured an ad for an expensive air purifier, framing it as a healthy choice for modern urbanites who want to be active and safe. In virtually every flower shop, some plants would be marked as having 'anti-smog' properties (for example chrysanthemum, ivy, or a corn plant). According to a 2020 study, almost half of the inhabitants consciously choose to buy plants that supposedly reduce pollution in their homes (Sliwowski et al 2020, 20). Wearing a mask[35] during smog fits has also become a common sight, with people discussing what style and what type of filter works best[36]. Everywhere, inhabitants would be targeted by products that supposedly alleviate the effects of air pollution. While many would shop without giving it extra thought, some of the inhabitants, like a PhD student Ewa, agonized over the political dimension of setting up a barrier against the air pollution:

> "I was avoiding buying the air purifier, you can imagine my thinking, I would view it as a sort of capitulation, protecting myself only in the safety of my home, because I can afford it[37], retreating in a sense... But seriously, it's such a huge improvement."

Even though Ewa did not want to fall into the self-isolation trap and saw the problematic aspects of her 'retreat' as she called it, she nevertheless eventually gave in. As she had been suffering from auto-immunity disorders, she explained that she could not negotiate it with herself any longer. Attempting to fix the living conditions by such 'repair' consumerism often translates as caring for oneself and for one's loved ones, facilitating an inevitable rise of such a new market. Green consumption thus became intertwined with inhabitants' ethical aspirations, eventually leading to individualizing and ultimately depoliticizing the causes of the need to engage in green consumption in the first place (Scerri 2009, 478). In a world of unequal means, this not only has a demobilizing effect, but also leads to furthering and rise of new hierarchies. Air pollution shifts 'green' consumption to 'repair' consumption that aims towards mitigating the effects of the toxic air. Sheltering in place in people's homes like Ewa has far

[35] With the fieldwork data gathered before the beginning of the Covid pandemics, it would be intriguing to see how the new mask wearing regulations imposed by the authorities as well as self-imposed by the citizens play out in relation to earlier emergence of anti-smog masks in the public realm. The anti-smog masks are generally more burdensome and create more of a barrier for breathing than the medical masks or the masks made of cloth that people around the world typically resort to. However, it is likely that since a mask is mandated anyway, even more inhabitants will opt for ones with (presumed) anti-smog properties.

[36] Some companies have even used the pollution at the production location site as an asset for their PR. When I was buying a mask for myself, the shop assistant praised my choice saying that 'the brand is from Cracow, if someone knows how to handle smog, it sure would be them'.

[37] The prices of air purifiers for homes range from about 50 EUR for the simplest models to over 1000 EUR.

reaching implications, as people's relationship to the urban space outside changes. As inhabitants have started slowly 'capitulating' as she said, some have described the feeling of alienation from the city, isolating families in their houses and limiting the street life, one of the essences of urban living. Additionally, the attempts to consume one's way out of pollution only reveal the situation that people without adequate housing or with no housing at all have had to face. Even in many public housing buildings, the inhabitants living in cold apartments with mouldy walls simply have not had the option to shut themselves from the pollution, as the air in their own homes has been just as toxic.

As I will show elsewhere in this dissertation, the larger real estate market has been slowly catching on and responding to inhabitants preoccupied with escaping the pollution. There have been media reports evaluating which areas enjoy the best air and real estate companies swam with the tide with their 'eco-rankings' of the neighbourhoods[38]. Even though many cannot afford to take air pollution distribution into account when choosing their homes, there is a significant group of buyers who do enjoy such luxury, often linking it to their 'green lifestyle' requirements. Despite the fact that there are no obvious hideaways such as mountains or seaside areas in the city, in the long run, the search for the least polluted areas will likely translate to a further increase in property and rent prices and exert further pressure on the ventilation corridor areas. In some cities around the world air pollution projection maps directly influence planning processes, with zoning and traffic networks construction guided by pollution geographies., Distribution of toxicity thus directly produces new urban landscapes that materialize and thus ground current unevenness (Veron 2005, 4). In Warsaw, the struggles around the ventilation corridors system mirror similar processes producing increasingly unequal urban spaces (see chapter 4).

Looking beyond the level of the city, the phenomenon of what I call 'smog migrants' has appeared as well, with people moving completely either to isolated places, where they can escape both the urban and rural pollution or to the seaside areas. According to a representative survey commissioned by a Rzeczpospolita daily, in 2018, 13.8 per cent of Poles thought about moving because of air pollution, with the number rising to 20 per cent among young respondents and up to 25 among the wealthier ones (Szaniawski 2018). Gosza, a young woman suffering from asthma, who also decided to leave Warsaw for a seaside city of Gdansk explained to me that the moment she realized she could get a 'good job' there, it was a no-brainer decision for her and her partner. She said she was fed up not only with the air pollution situation but also with the fact that she could not see a horizon of change, with all measures being taken too slowly for her to see a meaningful future in the city. Gosza considered herself lucky to find a suitable job outside of Warsaw, acknowledging that many do not have such options. As the survey showed, it is predominantly the better off inhabitants, who can deliberate about moving towards better air. Anecdotally, people I spoke to often use an example of employees in the IT sector, as the archetypal

[38] E.g. the real estate company and consulting Morizon produced a comparison that includes such categories as average number of days with exceeded PM_{10} standards, noise from traffic or a distance to the eco-friendly food stores. https://www.morizon.pl/blog/eko-ranking-dzielnic-warszawy/

smog migrants – relatively younger, with higher income, and not necessarily bound to a physical workplace. Needless to add that most inhabitants in Warsaw do not enjoy such privilege and changing work or changing homes is not a feasible alternative for them.

Researchers have noticed a pattern of wealthier and whiter people being less likely to perceive themselves to be vulnerable to different social issues (Satterfield, Mertz, and Slovic, 2004). Such skewed perception sometimes goes as far as attributing higher air pollution levels to other neighborhoods and areas that are perceived as worse off, regardless of whether that is actually the case (Bickerstaff and Walker, 2003). And one shall add that there surely are good reasons for that. In 2016, the average life expectancy of a man born in Wilanow, one of the most exclusive neighborhoods, would be 81 years, while only 71 for a man born in Praga, one of the poorest neighborhoods (Pochrzęst-Motyczyńska 2016). Even though air pollution might seem like one of the more egalitarian kinds of toxicity, people suffer from uneven exposures and are granted uneven maneuvering space when it comes to protecting themselves and their access to healthcare[39]. Besides the wealth/class factor, women tend to spend more time outside than men, as they are often the ones carrying the burden of extra household responsibilities and childcare. The levels of exposure therefore also have a strong gender dimension. The high level of inequality in Poland is alarming already. And in the case of Warsaw, the new unevenness is being produced on the go at the very moment.

Conclusion

A few years ago, I attended a semi-academic conference and remember a group of experts presenting their findings on recent urban development trends in Warsaw. Among other things, they argued that a relatively newly built metro became one of the axes of development as well as the real estate price spikes. The new infrastructure reordered the urban fabric against the more traditional division among the neighbourhoods, boosting the development of some relatively peripheral areas that would otherwise not be interesting for the real estate companies. In this chapter, I showed some of the ways in which the dust floating above the inhabitants' heads became such an ordering device, both reflecting and producing new fault lines in the city. As the nonhuman world never remains just a passive background for the social lives (Robbins 2012), the unique characteristics of toxicity in Warsaw have had a profound effect on responses by both the authorities and activists.

The chapter has explored the far-reaching structuring effects of the material and social presence of pollution, demonstrating that there are 'myriad articulations of how urban environmental and social

[39] Uneveness is clearly pronounced when it comes to access to healthcare. Even though Poland has a general insurance system that covers all the inhabitants, the quality and accessibility of the public system greatly vary. Because of that, it is very common for people to have a parallel private insurance – according to a 2016 study a full 40 per cent of inhabitants paid for private services alongside having access to public ones (CBOS 2016).

change co-determine each other' (Heynen, 2014, 598). Due to the diffuse origin as well as the nature of the low emission pollution, the policy response and activism did not enjoy the luxury of targeting one specific polluter. However, the activists' focus on presenting the air pollution as a general issue, and everyone's shared concern also partially overlooked the deeply rooted inequalities among the inhabitants. As the toxicity arose as a novel issue threatening the global city ambitions of Warsaw, some of the responses seem to have been shaped by efforts to upkeep the status of the city and its aspiring inhabitants. Delivering to the middle- and upper-class imaginaries of a successful life, the harmful individual car traffic or using fireplaces would not be addressed. At the same time, the relatively poorer inhabitants with old heating systems became the prime target of campaigns and policies. Similarly, the better-off inhabitants embraced the new reality with a turn towards repair consumerism, improving or at least believing in improving their living conditions by investing in a range of products combating air pollution. The air might be a shared concern for all, but as the chapter has shown, it discriminates just like anything else.

The following chapter will be devoted to an analysis of the measurement techniques and even more importantly, it will theorize a shift from pollution as a general issue to pollution as a spatially situated, highly particular one. If this chapter, informed by the political ecology literature focused on the atomizing consequences of the crisis, the next one will hopefully point towards possible avenues for change that do not lose sight of the lives of individual inhabitants.

4. Why smoke two packs instead of one: On air and knowledge intimacies

Introduction – on air and risk

On one especially grey looking December day in 2018, I attended a small pre-Christmas gingerbread baking party at my friend Marta's place. Located just above one of the busy arteries in the city, the kitchen where the baking was to take place was conjoined with the living room space. As we proceeded with the preparations, at one point the apartment inevitably filled with dust from the baking spices. And after more than one person also inevitably started sneezing without an end, opening of the balcony door was suggested.

'But shall we really? Spice dust out and smog in?' asked a friend with a smirk.

'You think the air is not good today? Well, let me check,' another guest exclaimed as she grabbed her phone to get the info on the air pollution levels from one of the numerous apps that sprung up recently.

Only after announcing that the air quality levels just about match the norms, which on most days is the best result one can expect during the winter months, we finally let the gingerbread dust out by opening the door. One could not fight a feeling that through such a simple interaction, I witnessed a commonplace holiday experience in Warsaw, surely repeated in many homes around the city. The appearance of air pollution on people's radars caused a sense of urgency among the inhabitants and has been treated as such, turning small everyday activities and actions like opening the balcony doors into situations that require deliberation. Everything changed and people were forced to reevaluate their relationship with the air they breathe and with the city they live in. What would in other context be seen as a case of slow violence took on a form of disruption that immediately started reshaping the lens that people used to make sense of a range of phenomena.

There are few things in life as omnipresent and multidimensional as air. We would die within minutes without it, yet often take breathing for granted. Filled with symbolic meanings, the air, the sky remains endearingly close and yet so abstract. We all know it intimately. At the same time, air as an atmospheric phenomenon, encompassing a mixture of elements and chemicals, remains strange and hard to grasp for most of us. Without a doubt, we are co-implicated in all these multiple dimensions of air simply by the act of breathing (Choy 2011, 145). However, as Choy notes, presenting such crisscrossing of scales when discussing air as a paradox would be intellectually boring and banal; instead of trying to resolve it, we shall search for ways to describe it as it is, maybe even finding new language along the way (ibid 167). Air truly is somehow too close to us to get used to living with it as a problem, but as the figures of premature deaths in the months hit by the worst pollution show, however intimate we might be with it through breathing, it can indeed be one.

In this chapter, I look at how people navigate their lives knowing that the air they are breathing might be unsafe. I dwell on how risk is articulated if it remains almost imperceptible to the senses and if it cannot really be completely avoided or contained. One of the answers in Warsaw would be found in a mediation of the pollution through technical devices. In a way, technology thus counter-intuitively aids collapsing of the perceived detachment between the natural world and the individual, allowing inhabitants to reevaluate their position in the urban environment. The chapter explores how knowledge becomes negotiated and how a whole new field of citizen science arose amid uncertainty and a perceived lack of publicly accessible data. The text also shows that the technology users do not necessarily remove doubt and uncertainty from their lives but find comfort in binding it closer to their homes and urban spaces they move in. The chapter thus points to a rise of importance of emplaced knowledge, where possible imperfections become overridden by a connection to places that people find salient. And in a state of crisis, democratization of access to knowledge through creating such new techno-intimacies in a city does have a potential to turn into an actionable political resource.

Feel nothing, fear everything

Attending a charity market in the university hallway, I overheard a student complaining about her blasting headache. She was convinced that its cause could be linked to the pollution, reported in red numbers that day. 'To hell with the lecture, I am not dealing with this air any longer,' she loudly exclaimed before making her escape home and avoiding an afternoon class. Living in Warsaw I observed countless such interactions with people interpreting occurrences that could be random or not, based on the air pollution readings. And importantly, they truly left me wondering too. What if my recurring cough was caused by the air and what if the occasional headaches could be linked to it too? I was pondering if I was just faking the symptoms to avoid working and I ruled it definitely not impossible. Maybe it could all be explained by a bit of tiredness or being sick after riding my bike in the cold. After all, especially during winter months I was rarely spending too much time outside and I have no history of respiratory illnesses, so it is questionable whether moving from one place to another could really have such an effect. But concerns would not stop with strictly health related issues. With friends we sometimes joked about the new study that found a link between air pollution and obesity[40], blaming our post-holiday season kilograms on the unseen pollutants floating all around us; a similar study appeared linking lower intelligence in children to air pollution. Even though the studies surely were legit, I and people around me would mostly be reluctant to judge occurrences in our lives through

[40] Kim, J.S., Alderete, T.L., Chen, Z. *et al.* Longitudinal associations of *in utero* and early life near-roadway air pollution with trajectories of childhood body mass index. *Environ Health* 17**,** 64 (2018)

the prism of air pollution; at other times, we just blamed it for whatever was bothering us at the given moment, never knowing where the middle ground would or should be.

Shapiro (2015, 369) would call this series of never-ending worries a process of a chemical sublime, an experience, and a practice of disquiet and reflection upon encountering distributed chemical threats. In his account of dealing with excessive levels of formaldehyde in indoor environments, the exposed bodies of his informants, as well as himself, become what could be described as 'sensors' that could recognize the toxicity. In this chapter based on ethnography from Warsaw, I would like to claim otherwise. Even though people do intimately know the air that their bodies bathe in, the bodily knowledge recognizing toxicity seems to remain scattered and unclear to most. To be fully transparent, some of the people I interviewed too insisted that they can feel the pollution, claiming that they can smell it. Maybe as a slight biting sensation at the back of the neck. Or an uncanny smell of something burning. Sometimes even a smell of childhood memories, visiting grandmas in villages without central heating. One woman narrated that even before anyone would be concerned with pollution in Warsaw, she could smell the pollution in the winter air… and loved it. The smell reminded her of family holidays in the mountain valleys of Poland, with notoriously polluted air due to locals often heating up by wood, coal, and whatever they can use. She explained to me how now she feels that she must unlearn the pleasant emotional reaction and switch on her rational self whenever the familiar winter holiday smell hits her nose; she must give up on seeing her holiday associations as harmless.[41]

Despite such colourful descriptions that some would come up with, most people I spoke to agreed that they in fact cannot feel the pollution at all. I count myself as a member of this less perceptive, but seemingly larger group. Failing to detect heightened pollution levels by smell, sometimes I would try to assess the situation by my sight. But fog and smog look rather similar and many people in the city until now refuse to acknowledge that some of the fogs are more saturated with harmful substances than others. And for most days, there would actually be nothing to observe, of course, unless one could get access to one of the exclusive offices in the high-rise buildings from which the grey-brownish pollution could be sometimes visible on the horizon. Thankfully, on most days pollution levels have not been so high to become palpable by one's eyes. Yes, as was pointed out to me by another anthropologist, air pollution might not be so intangible for everyone; lung diseases, asthma patients, and other vulnerable groups might often feel the heightened pollution levels right away. However, immediate bodily reactions are not so common and often remain diffuse, building up over time, appearing at one point and not the other. Even the elderly or the people with asthma that I spoke to very rarely acknowledged noticing anything with their senses and their coughs alone. And importantly, even some of the people

[41] In her work on Kodak factory, Ali Feser (2015) described a similar situation, as the employees of the company associated the chemical smell around the factory with good old days with secure employment, despite the fact that the toxins were proven to be dangerous for the inhabitants. In her story, people too created sensory bonds to the chemicals in the air and did not want to give them up.

who nowadays claim that they smell pollution admitted that 5 or 10 years ago, before all the pollution talk in the media, they would not smell anything or at least not link the smell to air quality. Without the immediacy of the threat, the air can easily slip out of people's minds. And in Warsaw, pollution in people's noses only followed once pollution was established as something to watch out for in Poland. The newly proliferated ecoanxiety (Mol and Spaargaren 1993, 443–444) clearly forced some of the people to create narratives translating what is happening for themselves, making sense of the new situation.

In his book Terror from the Air, cultural philosopher Sloterdijk (2009, 47) suggests that the environment as people understand it today was only discovered in the trenches of the World War I with the introduction of gas warfare, turning the act of breathing into a cultural issue. Never again would humanity just breathe freely: "What was once background and saturated latency has moved over to the side of the represented, the objective, the elaborated and the producible" (ibid., 107). In other words, the air stopped being obvious[42]. This could be described as the process of unworldling (Chen 2012, 203-205), as what used to be considered a normal world order becomes reshuffled by toxicities. Toxicity in the air thus mirrors scenarios of other imperceptible threats, like toxins in food or radiation after nuclear disasters. Famously theorized as the qualitatively new kinds of environmental risks by Ulrich Beck in his Risk Society (1992), they pose a danger that one cannot know enough about and that one cannot opt out from easily. We are thrown into risks that we have not chosen and that are not readily visible. On top of that, Beck reckons that they are out of the 'orbit of cultural experience, as people often feel unable to make their own judgments without reliance on experts. In a way, they constitute a 'double shock', as the threat is conjoined with being deprived of a sovereignty to evaluate the level of danger on one's own (ibid, 54).

Elaborating on the consequences of facing uncertain hazards and exposures, Veena Das (1995) described how survivors of a toxic gas accident in Bhopal were forced to raise their claims in a language of scientific certainty. As the disaster and its consequences were far too multifaceted and difficult to describe in a simple and verifiable cause and effect logic, it was an impossible task from the start. Especially when it comes to litigation, assigning phenomena numerical forms that more or less mimic certainty proves often crucial when formulating demands as well as producing both risk and its effects (Lupton 1999). As Kath Weston (2017, 76) points out in her work on radioactivity in Japan, if certainty continues to be set as a standard benchmark, claiming injury from the new types of threats becomes unattainable. After all, the production of 'uncertain events' is one of the defining characteristics of the modern (post)industrial environments (Whitington 2018, Murphy 2006, 7, Fortun 2012).

[42] Although it could be very well argued that some people such as miners toiling in poorly ventilated shafts have understood the dangers present in the air for centuries.

This has been uncovered already in work on the histories of the sick house syndrome (Murphy 2006), describing how imperceptible effects of the chemicals in the office space can not only be disregarded by the juries and politicians but also be deeply unnerving for the affected, especially if most of the complainants are not from a privileged group. Tracing how some chemical exposures are produced as perceptible, while others are deemed non-existent, the case of the sick buildings among others shows how vital it is to be able to identify a source of harm – and not only for the outside judgement, but also for the people, who suffer from the exposures themselves. For many, some form of articulation of the risk is a crucial component of their sense of if not being in control, at least of being in touch with their environment. The environments that arise with toxic landscapes do cause alarm, especially because they remain in the realm far beyond apprehension. And when it comes to air pollution, it is not the senses, it is the machines that ultimately decide what the concentrations are and whether one shall be concerned. The systems of measurements are what can turn the random cough or feeling of dizziness into a qualified symptom, framing it with evidence. The following section thus zooms in on the processes that guide measurements in Warsaw, looking at data entanglements in the city.

Don't break the thermometer

Figure 12. A measurement station. Warszawa , al. Niepodległości 227/233 (Environmental Inspection Agency website)

The official air monitoring in Poland is carried out by the Environmental Inspection Agency, administratively divided into provincial branches. Commonly, the environmental authorities measure concentrations of five pollutants that belong to the Air Quality Index: ozone, nitrogen dioxide, sulphur dioxide, and two kinds of particulate matter $PM_{2.5}$ and PM_{10} (oftentimes commonly presented as dust). The numbers stand for the sizes of their particles measured in micrometers, so for example $PM_{2.5}$ particulate matter index would measure particles that fall under the 2.5 micrometer diameter threshold.

It is especially these that have been a cause for concern in Warsaw, even though the nitrogen dioxide levels also often exceed the permissible levels.

There is a twofold system in place at the Environmental Inspection Agency consisting of meteorological modeling and the measurement stations. The modeling is based on a US-developed system Calpuff, a relatively cheap and accessible software that allows the scientists to generate the data based on the inputs that include the number of emitters, kinds of heating systems in place, topography, weather conditions, the height of the buildings, prevalent winds etc. According to the expert at the Provincial Inspection in the Mazowsze region, who was responsible for the introduction of the system and who personally worked on modeling the data for years, the air quality can be predicted with great precision in this manner.[43] However, despite being in possession of such a tool, the public in Warsaw seemed to be much more preoccupied with the second form of air pollution research – the measurement stations. During my fieldwork, I did not encounter many people following or discussing the model data, as most are not even aware of its existence. It was always the direct measurements stirring people's attention. This could be possibly due to the way the air quality data was usually conveyed by the media or simply because the station provided an indisputable link to a certain location, grounding the topic in place, figuratively and literally, a sentiment that will be revisited throughout the chapter. The measurement stations are of substantial proportions and cannot be missed in the street, providing a material presence for the measuring process.

The system of official measurements that followed international standards was only introduced in 2002, already far into the accession talks with the EU. As a side note, the process of standardization of air quality measurement is fascinating by itself. Originally, I hoped to be able to present a long-durée argument, looking at how air quality shifts corresponded to societal and economic changes during the economic transformations throughout the 20th century until now. The characteristics of air pollution have shifted over time and place. For example, Sulphur dioxide concentrations have been dramatically reduced in many countries since the peak in the 1980s (Klimont et al. 2013). The changes in the economic base in many cities in Europe as well as the gradual introduction of stricter regulations for some of the industries arguably changed the nature of toxins found in the air in Warsaw too. Linking air pollution levels to the rise and fall of industry in the city, the development of automobile culture as well as to the introduction of new norms with the EU accession seemed like an interesting research agenda. However, I quickly discovered that experts in Poland refuse to make any claims or even give an estimate on what the air pollution levels used to be before 2002. The measurement systems before

[43] She explained to me that almost all the variables could be covered by the model, although the individual housing units posed the greatest challenge. As she hinted with a smile, while major industry or power plants file reports and the data on their emissions is accessible and clear, it is nearly impossible to model whether someone would decide to burn old furniture instead of coal on a given day in an individual house. Despite such shortcomings, she asserted that the data generated by the model do match the data from the measurement stations, proving the validity of their work.

used a different methodology and measured different particles, making it virtually impossible to meaningfully compare the data. The scientist at the Provincial Inspection even suggested that the systems before were rather 'primitive' and even though it was clear that there was significant pollution[44] while Warsaw still had industry, it was not measured in a reliable manner. The incommensurability of the produced data thus de facto led to an erasure of the continual environmental history of air pollution in the country[45].

On the other side of the spectrum, what makes this moment of data friction (Edwards et al. 2011, 670) salient is that by extension, the relatively late introduction of the internationally recognized measurement system meant that Warsaw and Poland only started appearing on the various 'most polluted' lists in the 2000s. The international indexing thus provided an otherwise local issue with international comparison, scaling the air pollution up and placing Polish air on the global map. In a way, the international standards also constituted a further shift of the measurement deep into the scientific domain. If the only officially sanctioned measurement methods were either extremely costly stations or a complex meteorological model that required expert inputs, the people who felt they lacked sufficient data were completely cut out from the possibility of coproducing or even verifying them. The air was thus further lifted away from the everyday, producing a significant leeway for widespread rumours about the manner in which the measurements are carried out.

Overall there are about 200 measurement stations in Poland and 8 in Warsaw itself. The official measurement stations follow methodologies required by the EU and are costly to purchase and operate. The price of a basic station that would collect data on $PM_{2.5}$ and PM_{10} dust particles and benzo(a)pyrene is around 90 thousand EUR and its annual operation cost is around 35 thousand EUR plus a salary of a person in charge of the operation.[46] That is also one of the reasons why they are so sparsely distributed, as the state follows the minimum international requirements, but remains reluctant to invest in extra stations. The discussion about whether investing such significant amounts of money into purchasing more stations is a good use of public budget took place, but it was largely overshadowed by demand for more data.

At the beginning of my fieldwork in 2016, there were only two stations in central Warsaw. When one of them, located on a busy Marszalkowska street, was shut down in May 2018, the decision stirred a lot of negative reactions from the public, raising suspicion that the state is trying to conceal the air quality

[44] In Duchologia Polska, a cultural studies work on the times of transformation (understood as ranging from the 1980s), Olga Drenda (2016, 46) recalls how inhabitants would have a saying that "Springtime breathes the exhausts" to jokingly describe the toxic mix of household and industrial pollution in the city.

[45] This point gains a whole new meaning when linked to Holmes and Castaneda's work (2016) on the modes of temporality produced by employing a language of crisis. They assert that representing (often long-term) processes as sudden crises gives rise to an erasure of history and context that should otherwise be added to their evaluation. In case of air pollution in Warsaw and Poland, such erasure is thus not only discursive, but also rather literal.

[46] Cost estimates by the Provincial Environmental Inspection Agency in Mazowsze region https://wios.warszawa.pl/pl/aktualnosci-i-komunika/aktualnosci/1176,Aktualnosci-z-31032016-r-Informacja-dot-zakupu-przez-samorzady-nowych-stacji-pom.html

readings. For example, one of the disapproving reactions on Facebook exclaimed 'Don't you want to have a fever? Just break the thermometer!'. The map of the distribution of the 8 currently operating stations shows that most of them are situated in rather peripheral areas[47]. There was an inflow of accusations that the changes aim towards fudging the data on purpose, trying to keep the inhabitants in the inner city from realizing how alarming the situation is.

The employees of the Inspection tried to defend the move by repeating that the removed station was only an experimental project that did not represent air quality data accurately and in accordance with the EU measurement procedures, as it was located right next to the busy road. They also suggested that they are not hiding anything, as 'nobody claims that the air in the city centre got better, as that is simply not the case' (Smigiel 2018). In a way, this caused even more uproar. There is a significant number of such busy roads in Warsaw and suggesting that such measurements do not comply with the measurement procedures would mean that there is no way how to gain official data on the situation; and possibly even more importantly, no will to do so. Inhabitants suffering from exposures on the busy sidewalks or houses around the arteries would be kept out of the picture by design, deprived of knowing just how bad their everyday exposure is. On top of that, some suggested that even if the Inspection decided to discontinue the measurements, the city council could have taken over the costs and kept the station running[48] instead of 'conveniently' letting it go.

While suspicions about hiding the data by authorities would be one side of the story, the contention around shutting down of the station also pointed to a different dimension of the issue. Having such a low number of stations in a city that officially encompasses 517 square kilometres inevitably raised doubts about whether the readings are actually transferable to wherever one lives or works. As especially the inhabitants of the detached housing areas know too well, one neighbor that opts for heating with low quality coal or trash can make a significant difference, sometimes affecting air quality for the whole neighbourhood. Similarly, the wind patterns and topography often cause that one street is full of smoke whereas the next one might seem to have perfectly clean air. As one such dweller remarked, it is not reassuring to check the station 3 kilometres away, when he wants to go for a jog to his local park or check if it is safe for his kids to play in the garden. The Warsaw city hall has promised funding more professional measurement stations from the municipal budget, but until this moment (2020) installed none and seems to be only in a phase of preparing the competition documentation for possible providers.

How essential the materialization of pollution in the form of data from the measurement stations is could be demonstrated by a slightly bizarre story from the south of the country. Since the region suffers from much greater wintertime pollution than Warsaw, the towns with measurement stations within their

[47] This is also due to the fact that the Inspection bureau is not a city institution, but a Provincial one, covering a larger area.
[48] There is a precedence of similar move by Cracow (the second largest city) municipal administration.

territory often top European or even worldwide pollution lists. As some of these municipalities receive most of their income from tourism or are even registered as spa regions[49], the pollution charts pose a pressing PR issue endangering the revenues. At the same time, the expensive, state run measurement stations are distributed almost randomly and while some towns are thus projected onto a pollution map (and often become widely known as poster towns standing for the pollution crisis), others are left out, as if the issue would not relate to them at all[50]. "You're turning Sucha Beskidzka into the most polluted town in Europe!" a newspaper Gazeta Wyborcza reported on the complaints raised by the mayor of a town that serves as one of the entry points towards hiking trails in the Beskidy mountains (Wantuch 2015). His solution to the perceived injustice was rather unorthodox – he simply ordered switching off of the energy supply for the measurement station, having the issue miraculously disappear, if only for a moment. No data mean no pollution records and that in turn translates into no pollution charts positions for Sucha Beskidzka. The articulation of the phenomenon effectively took over the phenomenon itself, as the measurement station would be the one springing in and out of action here with considerable consequences for the town.[51] Murphy (2016) suggested that the history of air pollution should be read as a history of perceptibility and monitoring, as it is often linked to moments of a rise of new technical or discursive forms – and the mayor of Sucha Beskidzka simply attempted to, however clumsily, to take these new forms out of the picture.

How bad is it, really?

Until the 2017 air pollution boom, attempts at downplaying the scale of the problem in Warsaw were a common occurrence among the officials and local politicians alike. Many inhabitants were too caught by surprise when the pollution talk erupted. 'There's never been an issue with the air in Warsaw, but now they say there is…' my pensioner neighbour and a lifetime Warsaw inhabitant would say.[52]

[49] The social history of allergies and asthma by Gregg Mitman's (2004) elaborates on how air has been conceived of as a cure for sick bodies. For numerous sanatoriums and spa towns around Poland, the focus on air pollution shifted breathing from healing to inherently threatening and has effectively stripped the resorts off their raison d'etre.

[50] According to the anecdotes that I have heard, inhabitants of such municipalities often were not aware that air pollution issues relate to their hometowns. In areas without an actual measurement station and active media, activists or authorities it does sound like a probable scenario. The founder of Airly measurement system even boasted in one interview that it was the activities of his start-up was actually what first mobilized awareness in such regions.

[51] Interestingly, when I was talking about this measurement station 'incident' to my friends, some of them were not surprised at all and even gave examples of identical air pollution statistics-bending practices in other cities in the region, e.g. in Budapest.

[52] Especially for the older generations, people have memories of a significant moment of air quality improvement after a large-scale governmental investment in central heating especially in the 1960s and 1970s. At the time, the system alleviated the omnipresent low emission from coal heaters in the central areas and continues to serve the city until these days.

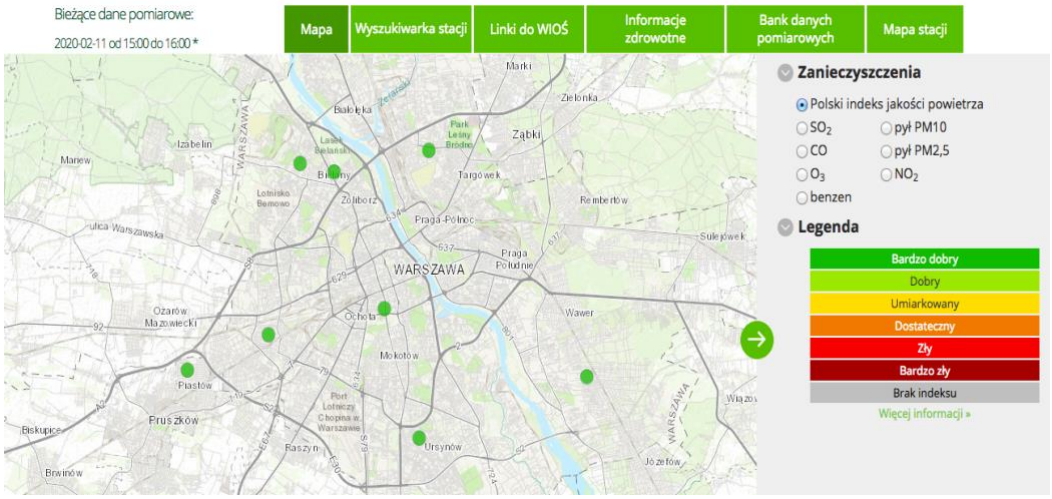


Figure 13. Distribution of the official measurement stations on a map of Warsaw, showing 'very good' air quality for the day.

The imperceptibility of pollution allows for significant leeway when interpreting the data. Especially when using comparative data within Poland, this is not a difficult side-step to do for the Warsaw municipalities, as the southern regions suffer from much higher pollution levels. Even though for most of the time pollution is significantly milder than in the south of Poland or in the cities of the global South, the air quality frequently falls below standards and poses risk to the population. With the rising public pressure, the municipality was eventually forced to give in, and the city hall no longer pretends that the problem does not exist. Once that happened, the authorities soon started mimicking fervent activity. The city hall would prepare plans and announce funding to address the issue and regularly approach the public with press releases and even billboard campaigns with questionable claims that the air was getting better. This would not be left without a response from the activists and the online sphere, as for every such press release, Warsovians would be quick to react with ridiculing memes and infographics showing a less optimistic picture, pointing out that the city hall would be using partial data readings often out of context and likely intentionally confusing favourable weather with long term trends (for more on this see a chapter on greenwashing). Even though the authorities thus changed their approach and stopped disregarding air pollution, the issues related to the data interpretation did not disappear.

Adding to the confusion was also the widespread phenomenon of shifting the air quality thresholds, paradoxically shared by a range of actors. The 'techniques for managing the public perception of risk' (Choy 2011, 164) in a form of tinkering with levels at which reporting and responding to the air pollution takes place have been fueled not only by political interests but also by the user design rules. For example, one of the most popular free air pollution measurement apps Kanarek shows readings in green (or supposedly safe) even when they reach 120 per cent of the norms. When confronted about the colour coding by one of my informants, the explanation of the founder of the app was that unfortunately, the situation in Poland is tilted towards high pollution results, so in order not to be in the yellow and

red colours constantly, he decided to bend the colour algorithm a little. Interestingly, when simultaneously checking a German-run air pollution tracking page that uses a segment of the same data as Kanarek with its green-coloured optimism, Poland (and much of Eastern Europe) would sometimes be immersed in orange and red colours – an image that is often widely shared on social media. The apps provide the exact numbers too, so the more knowledgeable or demanding users can make their own judgment, but the immediate visualization on the Kanarek map tends to suggest that the air quality is better than it actually is. Similarly, the state-run measurements use the term 'good' to describe air quality conditions that exceed the norms.

Tampering with colour schemes to enhance visualization and consumer experience of an app is only one side to the issue. During interviews, the activists and experts in Warsaw were always quick to point out to me that the EU accepted norms that the app uses are by itself more lenient than the recommendations by the World Health Organisation. Similarly, while the pollutant readings in absolute numbers may be the same in Spain and in Poland, the indexing of what is considered an alarming situation varies significantly among countries as well as among different cities. Warsaw itself has its own protocols on informing the citizens when pollutant concentrations reach especially high levels, implementing special measures such as free public transport or issuing a strong recommendation for vulnerable groups to avoid spending time outside. It is through setting such thresholds that visibility of a phenomenon that is by definition almost always invisible becomes enacted or on the other hand, erased. And activists in Warsaw often call out the city for what they perceive to be the attempts of such erasure through authorities' lack of response. Especially during smog fits they blog and post about what measures would be taken in other cities in Europe had they experienced given pollution levels.

As an example, I attach a post ridiculing the air pollution measurement system and the moving thresholds. With the family with kids sitting in a hazy park, the title ironically states: "Luckily, smog cannot be seen, it would be a shame not to savour such a day". And the first reply: "To be exact, smog today was only slightly above the norm, so according to the measurement system, the air quality was "good" ;)". On the day when the picture was taken, smog was clearly visible and allowed the author to joke about how 'good' the air is and taking ironic family pictures. However, this is rarely the case and it is therefore understandable, why inhabitants are often uneasy about relying on official informing when planning their daily activities.

The abstract and often seemingly random standards thus have far-reaching political and socio-material consequences (Bowker and Star, 1999). Depending on how they are used, they can cause alarm or appease the public. And at the end of the day, the inhabitants have to make sense of the maze of different readings and visualizations by themselves.

Figure 14. Facebook post ridiculing the measurement system

> "People tell me, but you smoke, so why do you care (and wear a mask) anyway? True, I do, but why shall I inhale two packs of cigarettes per day if I only actually smoke one?'

Wojtek, one of the activists operating a 'Build your own meter' program says. He explains to me that when the dust concentration as reported in the Kanarek app exceeds certain levels, he opts for the mask when going outside.

> 'Why exactly then, I don't know. But everyone can come up with a number for themselves."

The articulations of air pollution are often confusing and people in the city individually come up with forms of relating to the data and negotiating risk in their everyday lives. What people perceive as safe or even healthy air changes all the time. Taking a closer look at how inhabitants negotiate when the situation is dangerous, one could find a whole range of practices that could be observed. Some would follow the official Polish norms and reconsider outside activities when pollutants' concentration reaches the 100 per cent level. And some really only start changing their ways if the alarm concentrations are exceeded. On the other side of the spectrum would be the inhabitants who decided not to approach air as 'yet another thing to obsess about every single day', as my friend, a curator and a climate activist

explained to me. She explained that for her, air pollution surely is an important topic, but she tries to avoid changing her habits because she's refusing to start 'barricading herself' from the world. But as it turned out, she also has her own measurement of when alarming concentrations down on the city – every time her little daughter is not allowed to play outside in her kindergarten based on the recommendations by the municipality[53], she knows the air pollution is probably off the charts. At times it feels that one could hardly escape the measurements, even if they sometimes only reached you by proxy, as in this case.

Pollution at your house

While most people in the city just stick to their routines and occasionally get the news about the pollution levels from the news[54], there has been an increasing group of inhabitants who felt that the data should be more detailed and/or that the measurements provided by the state might not be trustworthy. As the perceived knowledge gap (Frickel and Vincent 2011) grew, several projects attempted to address the insufficient data by using the technology at hand. There is always a careful balancing going on among various significations of what expertise matters and what kind of data is deemed reliable or reliable enough when it comes to environmental knowledge production (Jones 2004). This is especially the case in a field that seems to be so tightly in the hands of experts and expensive measurement stations. This section will be devoted to the people who decided to take knowledge production back to their backyards through engaging with citizen science in Warsaw, focusing on how knowledge intimacies are forged in urban space.

The craving for more data among the public would eventually get filled by both for-profit and non-profit projects. A good example of the heavily marketed commercial solutions that originated in Poland is a startup that evolved from a project by engineering students called Airly. The slogan of the company is 'breathe consciously' and the welcome page of their web claims that 'Our mission is to create the most innovative and effective tools to track air quality. We believe our goal is to bring an effective contribution to tackle pollution problems and improve the quality of life for people all around the globe.' Their sensors cost approx. 200 EUR plus and an additional monthly fee of approx. 12 EUR. At the moment, the company boasts of having more than 3000 sensors installed around the world, most of them in Poland. The startup has actively tried to persuade municipalities that do not have a state-run measurement station to adopt their monitoring systems. Treating the gathered data as their property, the company has refused to provide them to non-profit open source applications that provide data from a range of measurement stations.

[53] Such measures are taken rarely (normally a few days per year) only when alarm levels in the city are reached.
[54] Besides reporting on pollution in analytical pieces or discussing alarm-level pollution, informing about the air quality has become an everyday section of the weather forecast news

There are other similar companies that have understood the potential of building such alternative networks in Poland, jumping on the bandwagon of an economic opportunity that was ushered in by the environmental crisis. The new field of accumulation through addressing the air pollution expanded rapidly and did not stop at measurement systems. For example, the Airly startup was boosted by their participation in a Smogathon event, a competition and a startup lab devoted to finding technological fixes for the air pollution issues, marrying the topic with fashionable slogans about innovation and sustainability solutions. Some of the winning projects at Smogathon include 'a new generation' of anti-smog masks or 'artistic air panels that create fresh air indoors' and convert carbon dioxide into oxygen (using photosynthesis).

While 'breathing consciously' is being sold as a product by some, there has been a growing group of people, who believed that knowledge about the air quality in their backyards should be accessible and free to everyone. One of the citizen science initiatives that I got to follow is called 'Build your own sensor' by 'Warsaw Smog Alarm' and 'Code for Poland'. The sensors used in this joint project cost 30 EUR and measure dust particles, temperature and humidity. The sensors and the open source online platform for their software and measurement mapping was started by a group of German activists in Stuttgart after they encountered the unwillingness of the local municipal government to share the air quality data with them. The sensors are far from being perfect and unlike with the commercial projects, the only person responsible for whether they are working correctly is the user. They are prone to all sorts of malfunctions; actually, on the day when I came to talk to project organisers, I was told that a device of an anthropologist friend, who agreed to speak about his sensor on TV earlier, broke down and shows clearly faulty zero readings. However, once the sensors are set up and working, they match the official readings with a deviation of about 10 per cent. Interestingly, they tend to get more precise results when the dust levels are higher – to put it simply, the users know that when the sensors show high pollution levels, they are probably right.

As one could expect, politicians, scientists, but also some members of the public have been skeptical towards using such imperfect systems and arguing that it would be better to rely on official data instead. A fight over what knowledge is acceptable or good enough broke out, sometimes even among the anti-air pollution activists themselves, as some until now remain convinced that the data must be 'scientific' and absolutely reliable to be used in advocacy. Weston (2017, 90) described how in post-Fukushima Japan, there even appeared calls to ban amateur Geiger-counters to safeguard the quality of the scientific data and avoid misinformation. While in Poland nobody would go that far, citizen science networks are often attacked as being complimentary to the state-run measurements at best, borderline fake news science at worst. For example, one user recalled how he was curiously accused by someone that the sensors within the community are installed in such a way that they always yield 'red number results', in order to be used in ideological warfare.

However, what has been rarely discussed is that with a 10 percent deviation or not, inhabitants are interested in what might be a slightly imprecise measurement, but also one that can be traced very precisely to their homes or streets. Interpreting data and making sense of pollution changes in the process of interactions among the people, the technologies, and the environment (Bickerstaff and Walker 2003). And in the case of Warsovian citizen scientists, it is the new spatial immediacy that people find so dear and so important in how they relate to the air and take precautions in their lives or not. After all, everyone knows that while the toxicity levels could be in theory measured quite precisely, the risk that it translates to remains in a world of probabilities. A digression of 10 percent on an imperfect device in one's home does not make a lot of difference when thinking about the likelihood of getting sick from the airborne pollutants. It makes a difference to know that the given reading is really bound to one's home though. Once the interpretation of the risk evidence becomes place-based (Reno 2011, 527), the individual understanding as well as claims gain a new dimension, new forms of immediacy.

> "Look at this, my house here, and ok, this is the neighbouring street I take on the way home… nice, nice, when I get off the tram, you can see what 'lovely' air I can expect today walking back."

Just like Antek, an avid member of the citizen science network in this quote, who showed me his daily journey home through the screen of the measurement app, people would regularly check the real time situation both at their current location, but also at places that are salient to them, be it home, their parent's house, kindergarten or a park. On top of that, some users would install a sensor both inside and outside their homes. During the smog fits, it is often advised by the authorities to stay in and limit outdoor activities. However, as many people found out for the first time after purchasing a sensor, the air quality indoors too often closely follows the situation out in the streets. In this manner, air pollution made its way even inside the spaces that many considered safe, attacking the notion of hideaways; removing a chance to take some time off and forget about toxicity. By becoming citizen scientists, people gain an opportunity to learn about the spaces that matter to them and their loved ones, gaining highly specific knowledge.

For my interlocutors, being able to relate the data directly to one's lived space thus far outstrips the negatives of imprecisions in measurement. If the measurement systems are often seen as straightjacketing the world into a single unified 'calculative practice' (Poovey 1998), the case of the citizen-run measurement system shows that acquiring exact and perfectly translatable data does not need to be the primary goal of the users. The drive towards acquiring information among Warsovians suggests that grounding the air pollution in place eventually turns out to be more salient than having possibly more precise, but also much more abstract data.

The kinds of environmental problems we see and the kinds of struggles we engage in are often shaped by the 'information infrastructure' or 'environmental information systems' (Bowker et al. 2010; Whitington 2018, Fortun 2004). It could be argued that the modes of knowing enabled by the rise of the citizen science networks directly feed into urban activism, grounding the knowledge in space and providing an added value of affective connections with it. As one user told me, once you start checking the partial measurements from smaller stations, 'it's not like the city is under a single huge grey cloud anymore'; the pollution becomes particular and inadvertently tied to a locality that people care about. In a classic political ecology research on urban forests, Heynen (2003) analyzed the relationship between forest cover and socioeconomic characteristics of the areas, revealing the uneven environments that different classes live with. However, when using the macro data, there seemed to be no links between the two. It was only the higher-resolution data that allowed for recognizing the pattern. With air pollution, it is not different. The data provided by the state are too general to allow inhabitants to meaningfully link them to their lives. And even if the shift of scale to the level of a street or even a building comes at a price of measurement reliability, many are happy to do the trade-off; producing data that are simply 'good enough' (Gabrys et al. 2016).

What is also important about the sensors is that they do not come as a ready-made product and need to be assembled by the users. In Poland, the activists decided to have a series of workshops to assist people with putting them together, although it is also possible to order the parts and do it at home. Taking part in one of such workshops, I could feel the excitement of adult participants who spent an hour assembling the cords and pieces and configuring the sensor to make it work, creating an emotional connection to their creation even before it started gathering the data. And needless to add, most of us also used to opportunity to take pictures and post them on our social media, as the assembling process had a certain aesthetic as well as an ideological appeal that people felt compelled to share. Even though it would be too far-fetched to claim that some see it as a game, it is clear that acquiring knowledge in this way has a playful aspect to it. The objects of sensors themselves are thus objects-artifacts attracting fascination; neighbours and friends are asking the inhabitants who installed them about the measuring process, inquiring how they work and where to find the data.

Later on, one of the workshop organizers showed me a forum of users, both Polish and international ones, where people would be actively tinkering with and improving their small measurement stations. Pritchard et al. (2018) wrote a whole article on the politics of fine-tuning the DIY devices, as a large amount of tinkering they require to produce reliable results is almost their in-built feature. The buzzing community was full of ideas on how to address small malfunctions or tips for making the device or the software more efficient. And while some tips would be decidedly high-tech, other included ideas on how to use an old sock to cover the ends to prevent the wasps from using the sensor to build a nest or how to best shield it from the rain.

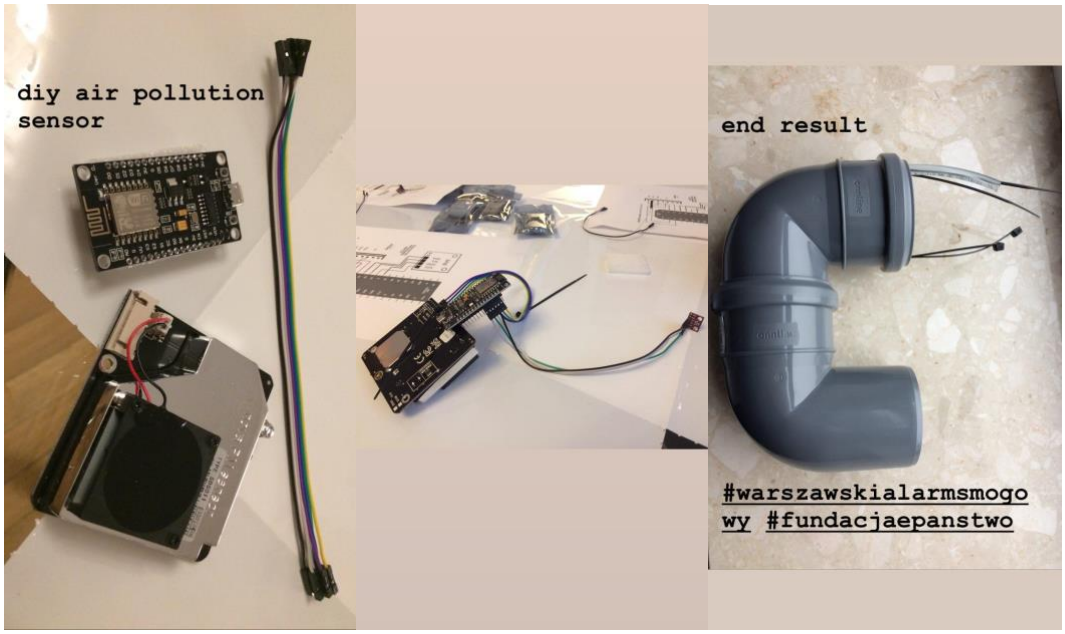


Figure 15 Assembling my DYI sensor

While seemingly most of such citizen scientists would be geeks, often IT engineers and people interested in technology, there has been a growing number of people who joined in without such a fascination for technology. Yet, the community seemed to exist in symbiosis, with the more active members troubleshooting problems for the less technically savvy ones. And vice-versa, as the technology enthusiasts were exploring the social embedding of the pollution crisis, discovering links and inequalities that might have been hidden from their sight earlier. In a way, people could reestablish the connection to their environment through readily accessing the data and engaging in a production of an alternative knowledge infrastructure. Built on a shared network and community collaboration, the spreading of the DYI measurement stations could be understood as a process of establishing peopled and lively system from below, reminiscent of urban improvisations mainly theorized in the global South (Amin 2014, Simone 2004). The citizen measurements allowed for reasserting the process of learning about their city and its air, taking it back home.

I'm sometimes also upset that I know

The crucial difference between the people who check the measurements on a daily or hourly basis and the ones who decide to not care however seems to be reflected in their levels of indignation. While some of the people, who opt for not 'getting stressed' about air pollution on daily basis and do not check the pollution levels proclaim that they do find the topic salient, it rarely translates into political action. On the other hand, it was impossible not to notice that the inhabitants who regularly checked the data and participated in the measurements themselves grew increasingly agitated and were likely to step up

their activities by engaging politically and persuading new people to join them. “Sure, in fact I’m getting upset about knowing about it (the pollution data) now. I wish I didn’t, but once you start following it, you just know that you gotta take action,” mentioned one of the workshop organizers, explaining that he is about to buy masks for his colleagues too, as he believes at least some of them might start protecting themselves. “When one sees that the loved ones, or the ones you care about do care and take precaution, the message spreads, the societal change slowly starts working.” The ‘toxic frustrations’ (Singer 2011, 158) of knowing that the environment one lives in is harmful, seem to be easier to handle when they are explicitly shared with others and fought with others.

To follow the air quality readings oftentimes translates into apprehending the downside to the model of development in Warsaw. It translates into apprehending that in the past decades, what has been ‘sold as progress often equals to regress instead’ as one of the critics of the city hall told me, recognizing that there is a price to pay for the unchecked automobility and reluctance to steer away from coal heating. Is the movement in Warsaw though yet another spectre of modernist belief in ultimate calculability and predictability? Manuel Yang (2011[55]) suggested that in Japan, the people’s measuring movement could be conceived of as an antithesis of capitalist quantification and Taylorist management techniques. By taking the measurements back to people’s hands, the ongoing capitalist exploitation is being made visible and the costs of the development cannot be ignored. The answer is thus both yes and no, as even though the measurements might be providing abstract numerical readings, the bundle of processes that stands behind them is as complex as can be. If anything, the figures of toxicity expose how the myth of cheap nature or cheap air in Poland had to abruptly come to an end.

There have been critical scholars pointing out that citizen science usually achieves only a minor attunement of the issue instead of asking radical questions and overhauling the underlying processes responsible for toxicity in the first place (Fortun and Fortun 2005). For example, Gwen Ottinger (2013) gave an interesting account of the struggle of the inhabitants suffering from a toxic environment near a petrochemical facility in Louisiana. As the inhabitants resorted to using citizen science methods to monitor chemicals in their neighbourhood, the discussion shifted from justice for the citizens towards quibbling over the reliability of the data and over who has the right kind of knowledge. Interestingly, in her case, the story does not end just there, as they found allies in engineers who could read the data and exert pressure on their own company in order to fight inefficiencies. The bigger issue thus got derailed and ended with adjustments that definitely improved people’s lives but sidestepped their other fundamental struggles. Foreclosing the imaginative horizons of the citizen scientists (Hurlbut 2016, 226) and narrowing a field of what questions can be asked and what demands could be realistic to achieve could certainly be a trap to consider.

[55] Via Kath Weston (2017)

In the case of Warsaw, it is crucial to note that the citizen science proponents that I spoke to did not believe that technical fixes would do the trick. They viewed gathering and opening up the measurement systems in a twofold manner. Firstly, they believed that getting precise data linked to people's homes allowed everyone to be safer. The chemical sublime or the diffuse apprehension of the toxicity that some inhabitants experience could be coupled with the data from one's backyard, readings just as intimate as the bodily sensations that are so hard to put one's finger on. As discussed at the beginning of the chapter, in the contemporary world, risks must often first and foremost become scientifically recognised, otherwise they effectively do not exist on any social level, whether it comes to medical, technological, or political issues (Beck 1992, 71). The way in which data make toxicity visible and recognizable directly conditions whatever political effects they might have (Beer 2016).

The work of the citizen scientists could expand the concept of data intimacy (Hong 2016), generally understood as linked to data normally belonging to the private sphere, closely associated with individual users, and oftentimes not sharable or to be shared. In the case of citizen measurements, people appreciate the intimate connection they have to the data, even more importantly so to the spaces that the data relate to. However, instead of keeping the information to themselves, they engage in building a sharing network. Jane Allison (2006) also uses the term techno-intimacy to describe the affective connections that can arise thanks to virtual or semi virtual high-tech interactions. A fascinating case of translating the air pollution data into a sensory experience has been described by Calvillo and Garnett (2019) on their intervention at the Seoul Biennale of Architecture. The authors designed a water vapor cloud with the mist signalling the $PM_{2.5}$ levels in the air. People were invited to walk through it or interact with the mist in various ways, sensing the pollution through a new 'embodied, collective and relational' experience. The authors' main claim is that new forms of engagement can facilitate new forms of actions and citizen engagement. Through the work of citizen scientists, a different kind of techno-intimacy is constituted, allowing people to reconnect with the ecologies around them and share the knowledge with others. Caring in this sense extended towards caring for others and strengthening the community that is open for everyone. And everyone, whether they want it or not are implied in the forms of chemosociality (Shapiro et al. 2017), entangling all inhabitants in relationships and connections stemming from chemical exposures. Turning the data into a network, an individualized issue of how to navigate the risk becomes socialized and a matter of shared concern.

And secondly, they believed that the creation of a network of avid citizens could and should lead towards political organizing. It has been shown how (new) forms of data intimacies have the capacity to act as a catalyst for environmental activism and boost collective action (Calvillo 2018, Calvillo and Garnett 2019, 134). As a specific kind of social cooperation is necessary in order for the system to work at all, distinctly new types of organizing for political activities might be the built-in outcome of the scientists' activities (Bresnihan 2020). For example, in her research on carbon meters, Marres (2012) shows how engagement with material objects can lead to a more traditional political activism,

encouraging people to vote and organize for a certain cause. Employing her concept of 'material participation', the widespread use of simple air measurement systems generated a boost in political participation. It was only through installing the devices on people's windowsills that the notion of risk, but also the anger about a lack of adequate response from the authorities got intertwined with their place of dwelling. Discontent can often lead to a rise of new publics and it surely is the case in Poland. While the measurements run by the state could be viewed as 'powerless science' (Boudia and Jas 2014), as their perceived detachment from the nitty-gritty of the streets found many wondering if the pollution readings really relate to their homes, the inconspicuous sensors that nowadays monitor almost every street brought a new impetus into the work of articulating air in Warsaw.

'Go and vote, the sensors won't do it by themselves!' said one of the workshop leaders after we finished assembling our sensors. Few could imagine listening to the authorities' promises spanning to 2030 or believe that the air was getting better anymore. And even though more political organizing and stronger networks would be needed to create a successful movement, it has been clear for many that returning to business as usual is out of question. One issue to deal with is that the attention of the public can easily reach its limits, especially if the matter of concern is invisible for most of the time. Just like in Kuchinskaya's study (2014, 50) on politics of invisibility and radiation after Chernobyl, the majority of people affected by toxicity only care 'from time to time', especially when the problem becomes visible for some reason. The question that remains to be answered in relation to the citizen science networks is if nowadays, cellphone apps possess a capacity to provide a similar visibility boost to keep the people engaged and enraged.

Conclusion

> *"…if bodies are an intimate location of effects and agencies, air is the substance that bathes and ties the scales of body, region, and globe together, and that subsequently enables personal and political claims to be scaled up, to global environmental politics, and down, to the politics of health." (Michael Choy, Ecologies of Comparison, 2011, 148)*

Questioning the notion that air pollution in non-extreme conditions, just like in Warsaw, can be widely articulated through a kind of chemical sublime, this chapter instead examined the ways in which measurements through technical devices are used and overhauled. Focusing on the rise of a network of citizen scientists and contrasting it with the state-run measurement system, I argued that for many inhabitants, spatially intimate, even if less reliable knowledge is deemed more salient than 'scientifically' correct and precise data that however lack emplacedness. Gaining access to specific, intimate data as well as sharing it with others on a freely accessible platform has not only democratized the availability of the data but also provided a potential ground for future political action. Just like in the quote, I started this chapter by looking at how people feel or do not feel pollution, especially while

knowing that the air might be toxic, and ended it by discussing how the process of scaling up might be facilitated.

Instead of an epilogue, I would like to close the chapter with a small meditation on future directions that organizing based on citizen science could take, possibly moving beyond simple spatial intimacies. As I mentioned earlier, 'go and vote' rhetoric as well as the strong drive towards organizing in air pollution struggles has been very much present among the citizen scientists. However, as the previous chapter demonstrated, voting 'against pollution' without a closer look at the specifics of the planned anti-pollution measures can by itself have detrimental effects on vulnerable groups of citizens. The issue that remains to be addressed in air pollution activism is thus how to meaningfully use the new forces in a political process and demand socially just change without shutting the doors towards the current state administration. Some authors have already hinted at directions in which the pollution data could be fine-tuned in a way that highlights the existing inequalities and provides ground for action. While in this chapter, I have focused on the possible effects of spatial embeddedness and data intimacies stemming from boundedness to the places that people find salient, even such enhanced data can lack the much-needed context in order to be used in activism.

One of the possible interventions relates to not only providing a place-specific data but to aim for creating data-mix based on a range of socio-environmental factors (Buzzelli 2008). In this manner, air quality data would be supplemented with information on other environmental hazards, levels of likely exposures, and health data, allowing for a more comprehensive understanding of localized risks (ibid, 513). Another option that could bypass a complicated creation of whole new metrics may be to use the DYI sensors to specifically target ('tag') places and/or groups within the community (Kuznetsov et al 2011). In this manner, the spatial intimacy that is currently shared by the network, but nevertheless linked to individuals and their particular needs and interests, could be tactically expanded. Salient spaces in this sense could include a park, a school, or a hospital, providing the inhabitants with knowledge about the current condition at various social spaces in their area, highlighting a community interconnectedness. Kuznetsov also gives an example of deploying the system with individuals that could provide larger data sets pertaining to specific groups, such as cyclists, parents, or the homeless. Such an approach could facilitate learning about the area as well as generate the much-needed contextual data for possible activist and policy goals. And as all points to the sad truth that air pollution is here to stay, locating new forms of describing its impact can be one of the crucial challenges in Warsaw and beyond.

5. Ventilation wedges: Towards the infrastructure of withdrawal

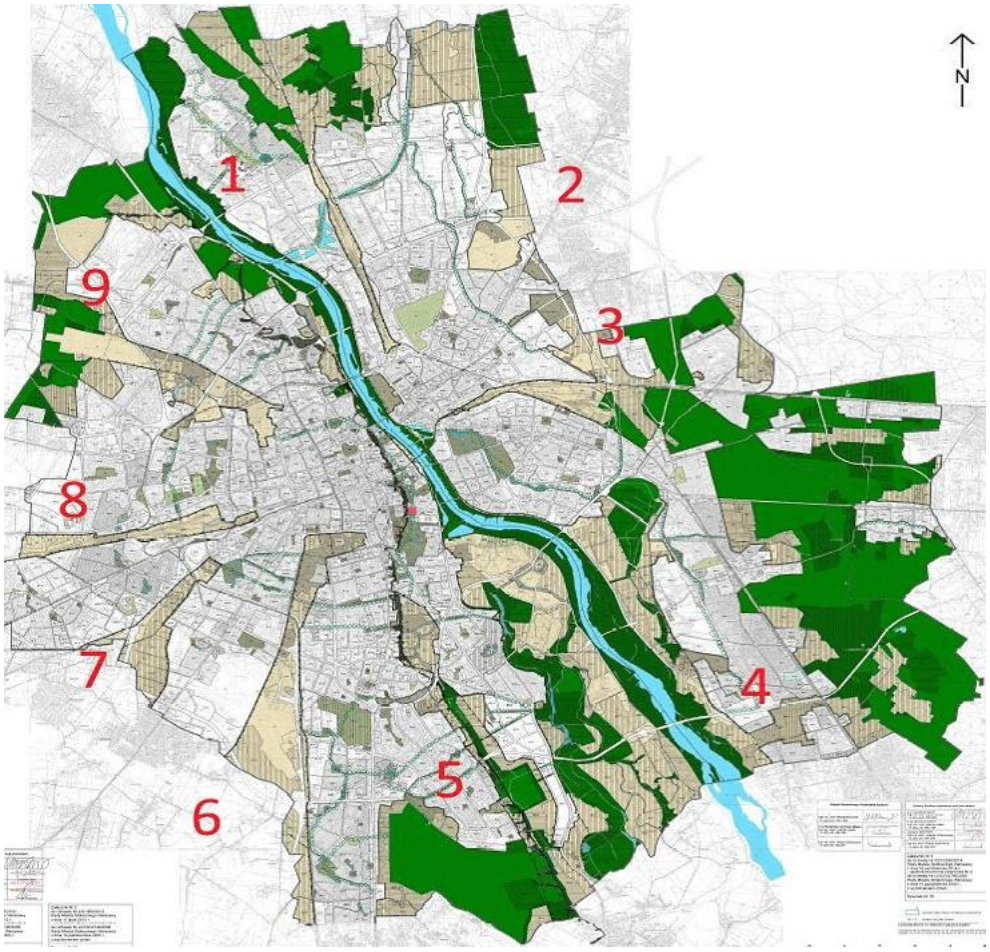


Figure 16. Ventilation Corridor System in 2006 (planning documents)

"So far, they haven't figured out how to build on the river, so at least that might stay as it is..." a researcher I spoke to remarked with laughter. Overtly critical of the lack of municipal interventions when it comes to new development projects within the air ventilation system in Warsaw, Prof. Oszewszka spends her days at the Department of Cartography investigating how much – or how little of the air corridors is left. She and her PhD student enthusiastically explain to me how they work on methodologies that would allow designing efficient new corridors and at the same time research and analyse changes in the existing ones in Warsaw and beyond. During the interview, I realize that neither she and nor her PhD student present are surprised by me being there, questioning them about issues they have been dealing with for years. Now, their research on the air corridors has become one of the hot topics in the city.

The almost destroyed socialist-modernist green corridor infrastructure recently rose to prominence as one of the focal points of urban struggles amid the air pollution crisis in Warsaw. Over the past years, the radial green ventilation corridors (or wedges as they are commonly referred to in Warsaw) have been slowly disappearing under new construction. However, this has been problematized only recently

as the smog scare revealed them as sites of contention that shall be discussed; and more importantly, preserved. The chapter addresses an issue of how some infrastructures come to possess a capacity to cultivate political subjectivities of the citizens within urban struggles. Amid an ongoing air pollution crisis, the chapter shows how the very materiality of the infrastructure channels the kinds of political claims that are made in the city and eventually even shapes the ruling notions in urban and environmental policy making. The text also points to the possible mimetic link between the character of the infrastructure and the kind of claims that are raised by the urban activists. The corridors come to represent the request for a withdrawal, lack of construction, and even abandonment within the remaining green space of the corridors, something that however must be ensured by the authorities' active interventions. In this sense, the contention around the ventilation corridors points to inhabitants' demand for more careful planning and regulation – asking for more, not less presence of the authorities.

The infrastructure of the wedges possesses a unique, negative nature that relies on no technology or upkeep whatsoever; it requires only an abstention from development. In this manner, the activists get to attack the status quo with its chaos in urban planning and extractionist, developmentalist tendencies that have been deemed responsible for the pollution. Trying to ensure the preservation of the infrastructure that requires abstention from construction activity in order to remain functioning provides a rich ground for formulation of an oppositional agenda that I term politics of withdrawal. The chapter investigates the interplay between the material presence of the corridors and the diffuse issue of air pollution and entanglement of the infrastructures that produce it, showing how the properties of the system provide the necessary ontological fixity to articulate grievances.

Some infrastructures become tangible sites of contention that can be employed in urban politics. Infrastructures are often seen as mirrors for the underlying ruling ideologies (Rabinow 2003); however, they have also proven to be able to transcend such a role and become sites of improvisation and tactics that often get out of hand for those in power. While infrastructures fail or are left to fail on purpose, their material presence often gets reactivated in surprising ways and possesses a capacity to assert itself beyond the immediate context in which it has been conceived or even beyond its actual existence. This plays a crucial role in the story of the wedges, as all of the above-mentioned has been taking place without people actually knowing if the system of the corridors works towards air ventilation or not; the major study on the issue was commissioned by the planning office only in 2017 and even though the results are not kept secret, they certainly have not reached the general public until now. The paper will thus show not only how doubt can be manufactured (Oreskes, Conway 2010), but also how the already existing state of suspended knowledge may be taken over and used by the citizens.

Beat Warsaw with the green wedge

The idea of the system of the green corridors in Warsaw reaches as far as to 1916 regulatory plan for the city prepared by a team of architects lead by Tadeusz Tolwinski. The common understanding is that

the inspiration for the wedges was taken from Fritsch' model for Vienna from 1896 as well as from Howard's garden city concept. Both sources of reference echoed the popular trend emphasizing the redeeming effects of the greenery vis-à-vis the ills of the modern city (Page 2001). Especially Howard's work 'Garden Cities of To-Morrow' (1902) has become extremely influential and remains cited until today. The book argues for organizing a city into triangle shaped sections crisscrossed by concentric rings, ensuring that all citizens enjoy equal access to green spaces.[56]

In Warsaw, air ventilation was cited as one of the reasons for the introduction of the wedges, alongside leisure and regulation of urban sprawl/creating natural boundaries among the neighbourhoods and thus providing an urbanist regulation for growth (Kotaszewicz 1994), mirroring a similar approach to urban green terrains in other industrialized and newly industrializing cities around the world (Benedict and McMahon 2006). The introduction of the system was deemed especially salient due to the fact that the central areas were getting increasingly dense and perceived as unhygienic and dirty, posing a threat to the reproduction of the population, very much in line with Smith's (1990) now classic observation that what is commonly perceived as nature is, in fact, an element of the reproduction process. In the 1920s, the plans also preconceived a ring of reservation green areas around the city that would act as reservoirs able to pump fresh air to the corridors. In addition to that, the governments introduced a railway system servicing communities surrounding the city that works until now and respects the star-shaped corridor outline (Chmielewski 2004).

After the World War II, with more than 80 per cent of the city destroyed, the urban planners decided to reinstate the radial green corridors by including them in the new plans. At the time, enacting the plans was a fairly easy endeavour, as all the land in the capital was nationalized under the Bierut decree provision, giving the socialist planners unprecedented freedom in envisioning the new "city-phoenix" Warsaw. The wedges were supposed to play an important role as the city grew increasingly industrialized and was in dire need of air ventilation. They included such diverse spaces as parks and forests, cemeteries, airports, sports facilities, allotment gardens, military grounds, open arteries such as railways as well as random green spaces with no landscaping, officially called 'undeveloped green lands' (Staniszkis 2012, 93). A large part of the corridors was also covered by the agricultural land, as until the 1990s, almost 30 per cent of the urban territory was used for farming (Warsaw Strategy 1997, 276).

With minor exceptions of some development projects, the system remained in place until the end of socialism, encompassing vast spaces in the city. There is a popular urban myth that sometimes appeared in my interviews and I came across in online discussions, claiming that the reintroduction and

[56] Interestingly, besides Warsaw being modelled using this inspiration, there is a whole neighbourhood on the outskirts of the city called Wlochy that is organized as a garden city on a much smaller scale, but in a way stays closer to the once so fashionable urbanist concept. Also unlike the wedges, it is recognized as a compact urbanist heritage, with signs scattered around the neighbourhood, marking the architectural achievements for the visitors.

preservation of the wedges during the rebuilding process had to do with strategic military reasons. The story goes that in case of a nuclear attack on Warsaw, the corridors would allow for smoother outflow of the radioactive wave and eventually reduce the damage. In line with this reasoning, the Cold War concerns of the government are also cited as a reason why the air corridor system remained intact until the end of socialism. Needless to say, my attempts to verify this theory have been unsuccessful, and the experts that I interviewed either had no knowledge of such plans or discarded them as nonsensical. Nonsensical or not, the urban myth points to the fact that people carry deeply ingrained knowledge of the wedges and their role in ventilation and free air (or toxicity) flow in the city.

This chapter builds on a set of knowledge produced thanks to the 'infrastructural turn' (Graham 2010) that brought the nitty-gritty of the socio-material worlds in our lives to the forefront. Studying the previously unstudied material infrastructure (Star, 1999), scholars' focus on the relationships between the technological infrastructural solutions and the social processes that they necessarily reflect, but also co-create, provides an intriguing lens that allows for linking various scales of social processes (Furlong 2010). Green infrastructure[57] specifically has received considerable attention in the literature, but the research has frequently been rather policy oriented (Czechowski et al. 2015, Heynen et al. 2006, Sandberg et al. 2014).[58] A closer anthropological analysis of the air ventilation infrastructure poses a novel case as well as provides an entry into an investigation of what effect the larger shifts in society have on the green wedges and in what way the wedges seem to speak back. Infrastructures are commonly known to enable movement of other matter; the green corridors were conceived in order to enable movement of air or direction of urban development, but as the chapter shows, they may also enable and shape the kinds of claims that get raised by the Warsovians through a newly formed human and non-human alliance.

Due to the prevalence of visibility of so-called grey infrastructures, the rigid, expensive major structures (and often literally grey, as they are made out of concrete), it is common to view infrastructure as heavily path-dependent in a sense that it is difficult to alter on the one hand and materially stable on the other, depending on the view. Anique Hommels (2005) called this characteristic a great obduracy of the infrastructures. Even though this is very well true, it is vital to go one step further and examine how such obduracy comes about, as in most cases, the stability is achieved through a large amount of work

[57] More recently, the concept became adopted as a shifted mode of green governance by municipalities around the world as a substitute for the earlier and amply criticized concept of ecosystem services (see e.g. Melathopoulos and Stoner 2015). This is also the case in Warsaw, where the term green infrastructure, signalling an acknowledgment of interrelations between the natural and the social in the urban realm, has been used in the official documents.

[58] In Eastern Europe and other post-socialist countries, the focus has often been on shrinking cities and the ways in which communities deal with new abundance of space in the urban realm (Rossler 2010). In Warsaw, the shrinking city theorizing certainly does not stand, although paradoxically there is an echo that is pertinent to this chapter. The current planning documents predicted a significantly larger population growth than the one that the city is experiencing now or that it can expect in the future. As the plans are adjusted for future 3 million inhabitants, they allow for a much more extensive development than suitable for a city of nearly 2 million.

and resources invested in the maintenance of the system (Geels, 2002, Graham and Thrift 2007).

What is unique about the corridor case is that in a strict sense of the word, the demand for high maintenance does not apply here. The system employs basically no technology; even though it certainly is a result of expert deliberation on the betterment of the urban life. The very materiality of wedges actually requires little; it is an infrastructure that thrives with inactivity and no experts are needed to maintain the greenery. If any of the institutions or facilities within the corridor fail or break down, as has been the case of several sporting grounds in the 1990s, the natural, the plant vagabonds (Clement 2011) take over, only reinforcing the system. A constant upkeep as an inherent characteristic of the infrastructure (Graham, Thrift 2007) is thus its inbuilt feature. The modernist rationality behind the system works almost counter-intuitively through abstaining from development; i.e. through withdrawal. The stability of the wedges is thus literally derived from a constant process of becoming, a constant flux (Larking 2013, Cass et al. 2018) of the plants that inhabit their territory.

Plans vs. the market

The disintegration process of the system did not come at once, as during the 1990s, construction in Warsaw as well as Poland in fact developed at a rather slow pace[59]. The wedges system was included in the Warsaw master plan in 1992 and corridors covered 18 per cent of the city area (Osinska-Skotak, Zawalich 2016, 350). However, a major ownership regime change occurred in Poland and specifically in Warsaw. All the land that was nationalized after the war was to be returned to the original owners and their descendants. As a result, significant areas within the wedges were handed over to the private owners. The way in which this restitution process has been handled has been extremely messy and in a way become a source of a national trauma that has not seen its end until this day.[60] Generally, the lengths to which the Polish governments went in order to allow for a return of the lots back to the pre-war owners despite the problems it necessarily caused only adds to Hann's thesis on the extreme centrality of private property across post-socialist countries (Hann 2005).

[59] There are two common explanations for the economic stagnation throughout the 1990s. Don Kalb (2016) interprets this as the capital waiting for the ethos of Solidarnosc to die out completely in favour of the infamous Sachs/Balczerowicz duo of shock therapists, Poblocki (2018) suggests it shall be understood as a prolonged aftermath of the 1980s economic crisis in the country.

[60] 40, 000 to 60,000 people were affected and faced a possibility of being forced out of their flats, sometimes from the ones they themselves helped to build after the war (Wiesztort 2016). The restitution process in Warsaw has had numerous drawbacks and I will list three of the major ones. Firstly, although the city was almost completely destroyed, the owners of the pre-war buildings claim ownerships of the completely new constructions standing on their lot; this can be perceived as unfair especially since the capital was largely rebuilt as a collective effort of the Polish people and a large percentage of the old buildings was in fact heavily mortgaged, with owners' debts never paid off. However, none of this was considered upon returning the properties. Secondly, the restitution titles could be traded. This resulted in a situation, when numerous companies would be buying titles for near to nothing from unsuspecting elderly people, turning them into mighty profits. Finally, the whole process has been rather prone to manipulations and there have been manifold accusations of embezzlement and 'restitution mafia' at the city hall, with several officials already sentenced in criminal proceedings.

In 2001, the Warsaw master plan (the most encompassing document in the urban planning hierarchy) again included the wedges, but with reduced size. The planners therefore de facto sanctioned the chipping away of the space within the wedges that was already occurring and drew the plan in accordance with the reality. Because of this, one of the cartographers at the Technical University called the plan 'one of the worst in history' when it comes to the protection of the corridors. Possibly an overstatement, but she hinted at the unsettling trend of the bureaucrats succumbing to the development on the ground instead of standing by the older plans and demanding their observance. The latest Warsaw master plan from 2006 also includes 9 corridors and prohibits any actions that could have a significant impact on the environment.

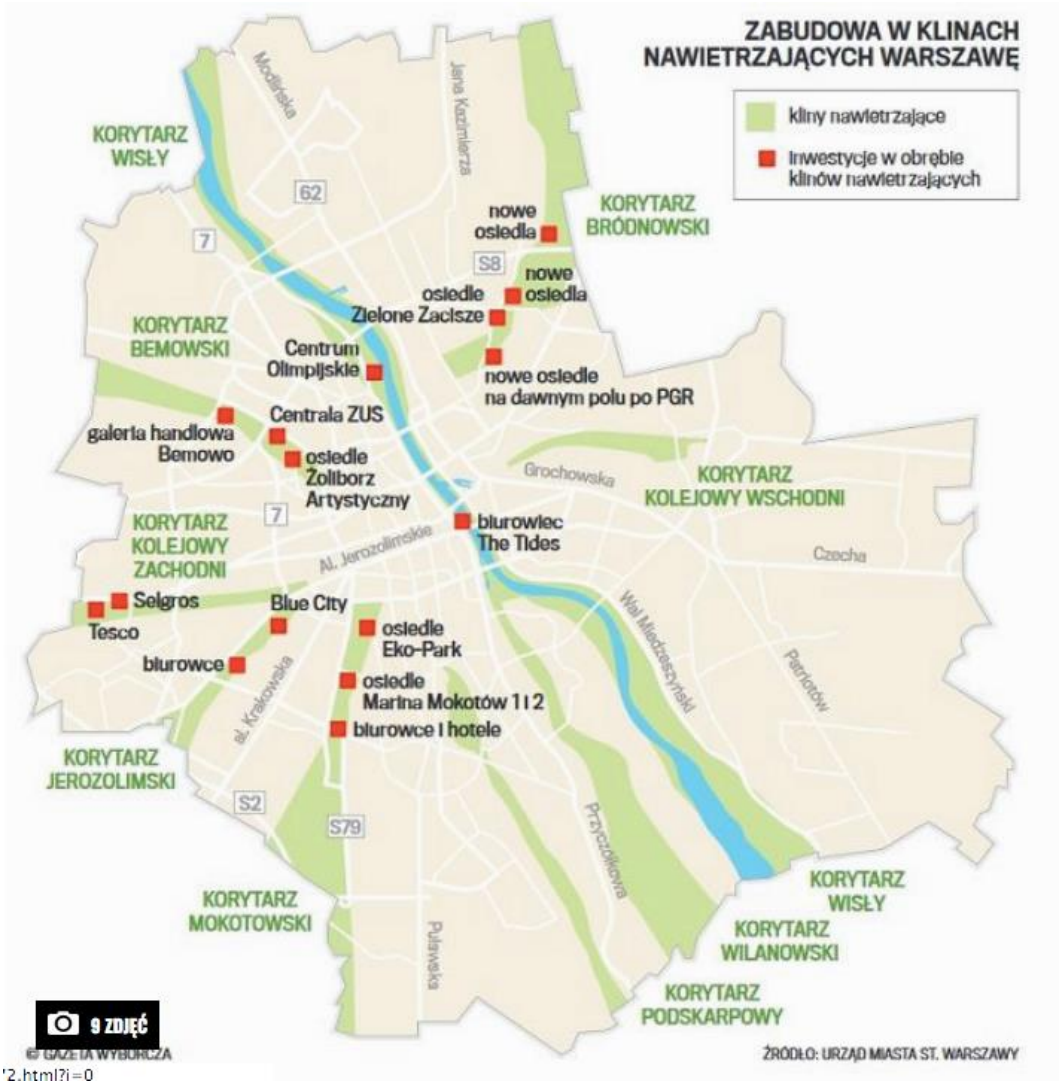
In theory, it therefore seems that the wedges system shall be protected. However, the catch lies in urban planning mechanisms. First of all, the master plan fails to explicitly ban new construction and according to Sawicki (2018, 95), a former deputy head architect of Warsaw, its provisions regarding the corridors are deemed too general to allow for their effective execution or to ensure transposition into municipal planning documents.[61] The municipal spatial development plans must be in line with the Warsaw master plan, but amid their absence, the master plan is not legally binding.[62] And for reasons that are hard to disentangle, but very easy to speculate on, the plans are missing also in the extremely valuable central areas of Warsaw.

On top of that, the opinion that plans limit citizens' freedom and shall be delegated to the 'communist' past gained popularity especially in the 1990s and early 2000s. Some researchers suggest that the strategy of presenting the regulations as something obsolete and linked to vilified state socialism was an intentional discursive strategy to mask the measures that in fact only benefit the investors (Samec and Gibas 2018). In the mid 1990s, mayor Swiecicki remarked: "American cities are beautiful even though they grew from chaos" (Buczek, Geremek 2014). Chaos[63] has become such a strong analogy used across political and social spectrums usually to describe the negative condition of urban development in Warsaw, it led Joanna Kusiak (2017) to write a whole book on a tendency to omit the underlying patterned processes in the city and instead talking about an overwhelming metaphor of 'chaos' as a reason behind all ills.

[61] Specifically, the master plan provisions ban 1. any 'equipment or installations' that could have detrimental effect on air quality; 2. construction of buildings limiting free flow of air; and 3. mandates an obligation to maintain the area in a way that promotes air exchange. (Master Plan, 30, translation by author).

[62] At the end of March 2018, only 36,78 per cent of the City of Warsawa areas was covered by municipal spatial development plans. Another 35.26 per cent of area has plans in the process of preparation, with an average time of completion ranging between 5 and 7 years. It shall be added that preparation of the plans is a compulsory responsibility for the local authorities. One of the commonly cited reasons for the slow pace of the process is that once the municipality assigns land a public status, it must reimburse the owners, putting especially small municipalities under financial strain.

[63] A curator and critic Grzegorz Piatek (2007, 32) also found a silver lining to the perceived 'chaos' in Warsaw. He claimed that cities in Poland "might seem chaotic, but it is a creative chaos, which became a unique laboratory after 1989, in which a natural process of selection is in operation". (cited in Bittner 2012)



'2.html?i=0

Figure 17. A map of some of the new development projects within the corridors (Gazeta Wyborcza)

An administrative procedure that exists in order to allow for some construction while the plans are lacking, called 'decision on the conditions of construction' or 'land development decision' was repeatedly highlighted in my interviews as a major problem linked to a lack of plans. Issued on an ad-hoc basis, the procedure has been criticized for creating a significant amount of space for backdoor negotiations, often rather shady agreements between the investors and the city. There are several issues that make the 'decisions' rather problematic. Even though the metropolitan planning agenda manual does exist, it cannot be enforced in a legally binding way and it is up for the discretion of the specific districts whether they oblige or not when issuing the decisions; and in some cases, there has been a lot of suspicion among the citizens about how the decisions of the officials came about. In addition to that, the bureaucrats are by law obliged to issue a positive decision if the legal conditions for construction have been met – and conveniently, air protection simply is not a section of an environmental impact assessment report.

The legal limbo plus the fact that the space within the corridors has been often unused, penetrating almost the very city centre turned some lots within the wedges into extremely valuable and convenient construction ground. The result of this scenario is a rather predictable construction bonanza, in the words of a landscape architecture researcher Czarnecka:

> "Here, there, here and there's no urbanist logic to it. It's as if you threw in confetti, it falls randomly and here we go."

A neat map of new projects in Figure 2 published by Gazeta Wyborcza can give a taste of what prof. Czarnecka meant by suggesting that new construction developments within the wedges can be likened to confetti falling on the landscape of the city. The corridors themselves thus in a way became an agent shaping the direction of the new construction, ironically by reversing their original logic of guiding the development of the urban tissue around them. Looking at absolute numbers, the amount of built up area has not risen so dramatically within the wedges. It went from 15 per cent in 1992 to 23 percent in 2015 (Osinska-Skotak, Zawalich 2016, 356). However, some of the new developments block the wedges in the middle, allegedly destroying their ventilation potential.

Marina and the rest

A 30-hectare large gated community Marina Mokotow[64] built on a previously public land that was sold off to the developer is likely the most contentious case of such construction, as it literally blocked one of the corridors in its narrowest point. The developers defend themselves by a study that claims that the wind speed in the corridor decreased only by 0.45 per cent. However, this did little to appease the public that perceived the development project as a glaring symbol of arrogance of developers, Polish obsession with private ownership[65], and incompetence and/or clientelism of the authorities. The first section of the development started already in the late 1990s, but it was only in 2018 that the next stage of construction was initiated, finishing off the blockage of the corridor, already during a period of widespread concerns about the air pollution in the city. One of the urban planners, who resigned in protest shortly after the sale of the public lot recalls the process:

[64] Name Marina has nothing to do with actual marina, but with a small water reservoir that belongs to the water system of the city and thus must have been incorporated into the construction plan by the developer. However, the PR strategists thought it would be a good idea to give evocative names to the streets, so we can find Frigate street, Cruise street or Sea street here. Catching up on the middle class' imaginaries about exclusivity and the exotic sea resorts, the water reservoir was used to bring nature back to the built urban space, serving as a simulacra of a faraway paradise that the buyers could experience while being at home (Lefebvre 2003, 26).

[65] The Marina Mokotow estate is also a living monument to the securitization discourse in Poland. Not only there is a fence around the whole estate, with only one guarded gate that inhabitants or visitors can use for entry, but the individual buildings within the area too have their own, smaller fences, with people joking that the site looks like a labour camp. One of my interlocutors claimed that he heard the developers repenting for this lately, agreeing that they 'overdid it a little'. The phenomenon of gated communities continues to play a central role in the housing stock in the city, modyfing the ways in which the urban space can be used (for more see Gadecki 2009).

> "At the time, massive PR actions were rolled out, stating that the corridors are not working and are not necessary. And of course, the discussion about the air quality, about the green areas was not as much of an issue as it is today. Partially this would be because of lower consciousness, but also because Warsaw was perceived as a city that is very open for investors; and there were very few investments of a kind… ….Also, it was landscaped only partially. There's a cemetery of Soviet soldiers, some allotment gardens, but nothing like a well landscaped green corridor... …But of course, I could to some extent understand such processes, providing that the city doesn't have full control of the land in terms of ownership; and the planning system was kind of weak. In the beginning, planning in general was criticized as an oppressive tool of an ancient regime..."[66]

He hinted at several dimensions of the case here. Firstly, a collapse of many urban facilities and a lack of proper landscaping that actually suits the wedges and their functioning, since the overgrown greenery certainly does not hinder the air flow, eventually turned out to be one of the causes for their demise. The lack of proper landscaping allowed for portraying the areas as useless. The paradox is thus analogical to the one described in the chapter on the urban gaps. And secondly, he attested to the widespread process of discarding democratic planning and exchanging it for PR campaigns and market mechanisms. Such reprogramming could also be identified in other post-socialist countries in the region, with city halls shifting from planning the urban environment to becoming just a servicing agent providing the conditions for the investors (Collier 2011, Olssen and Peters 2005).

Marina Mokotow and other similar developments often use the proximity of green areas in their PR strategies (for example one estate in the vicinity is even called Eko park), further angering the people who feel that such projects are slowly chipping away the greenery that used to be accessible to everyone. Adding to the already unequal access to urban greenspaces and parks in different neighbourhoods and different socio-economic standing of the inhabitants (Landry and Chakraborty 2009, Pham et al. 2012) and echoing the trends of environmental gentrification, just in reverse (Checker 2011). If usually the term environmental gentrification is used to describe gentrification processes that stem from greening interventions in urban areas such as the creation of new parks, gardens, or clean ups of industrial waste, in the case of the Marina development, the pre-existing environmental conditions were among the prime reasons why the area became so attractive for the developers. The inhabitants at Marina and in neighbouring developments that I spoke to have been aware of having a property in the ventilation corridor. They were happy they could 'snatch' a property in the area with such 'good air' and major parks and greenery nearby as one young mother living at the estate told me. Such an open acknowledgement of the search for 'good air' is rather indicative, as it demonstrates that in the near

[66] He also added that funding for the Marina Mokotow development was a state owned bank with its development fund, making the circle complete.

future, the city neighbourhoods will likely get reorganized based on their real or perceived air quality, adding a new hierarchy to the already uneven spatial distribution of the city.

Figure 18. Marina Mokotow (Wspolnota Mieszkaniowa Marina Mokotow)

My informants in Warsaw quite universally share the assumption that the lack of planning in such valuable urban areas is a result of a conscious process that suits both the investors and the city authorities; benefiting the wealthy few. If air is one concern, urban space and its reordering became another one. During my fieldwork, I could see discontent and suspicions growing with every new major development project announced based on the land development decisions. This gives rise to a unique paradox linked to the case of the wedges. The process of development within the corridors points to the increase in inequality and inaccessibility in the city; and the inhabitants' inability to reach the benefits of the inherited infrastructures mirrors scenarios in other countries in the region (Vozvanov 2014). Several theorists have pointed out that planning processes in contemporary cities often fuel gentrification, give rise to new forms of segregation and exclusion, facilitate 'accumulation by dispossession', and generally serve the upper classes (Vargas 2005, Miraftab 2009, Banerjee-Guha, 2010). However, as it is apparent from the quote in the previous section, many people in Warsaw, on the contrary, seem to yearn for planning. They demand reestablishing of their right to the city through effective and democratic urban planning mechanisms. Fed up with the libertarian approach to new construction developments, citizens would welcome more tools to enforce regulations; in some cases, even calls for demolishing some of the new constructions within the wedges appeared.

In spite of much of the literature influenced by Scott's seminal Seeing by the State (1998) and in spite of widespread post-socialist distaste for planning that has been discussed earlier, people often wish for some basic rules that can be relied on, some basic gridding provided by the authorities (e.g. Jansen 2015).[67] If the urbanist rules are either lacking or bent based on highly suspicious criteria, projects like Marina Mokotow are the ones that do get through. While the earlier chapter on urban gaps put resident's

[67] In his work on state in Bosnia and Herzegovina, Jansen (2015) shows how people living in a city ravaged by the recent war and suffering from acute lack of functioning governance wish for the state 'to see them' and make their lives more structured. They lament the lack of certainty in their daily lives, spanning from relatively minor issues like non-existent bus schedules to ones dealing with their children's education or their work.

ability to make do on the pedestal, focusing on the case of corridors shows that without clearly outlined planning mechanisms, wealthy investors are likely to succeed at the expense of the communities. In this sense, rules that can be relied on are necessary in order to provide maneuvering space for the inhabitants; and after all, setting planning and more creative approaches on the citizens' side as opposites only perpetuates this false dichotomy (Koster 2020).

And there are examples in the not so distant past that one can reach for. As I outlined earlier in the dissertation, post-war Warsaw is a result of careful planning and it is full of highly conceptual urbanist spaces. Some of them are beloved by the inhabitants and have already become parts of official national heritage. Many others, less so. As Poblocki (2018) argues specifically for the case of Warsaw, instead of calling for order (porzadek) in a sense used by the right wing, the demand of the local urban movements rather aims towards 'spatial harmony' (lad przestrzenny), echoing promises of modernist and socialist modernist spatial planning[68] – largely unfulfilled, yet progressive urban projects. So instead of analysing the activities against construction in the corridor areas as yet another case of middle-class NIMBY activism, they should instead be contextualized as a demand for urban ordering that shows at least some signs of future orientation and deliberation about the city. And most importantly, a demand for some democratic accountability. Sometimes fighting against omnipresent signs of decline and trying to keep the built (or unbuilt) environment from ruin, i.e. trying to keep the things the way they are, to keep them good enough, can be perceived as transformative (Ringel 2014, 57). Ringel shows so much in his research in a post-industrial area in Germany, following people who fight for keeping what they have known instead of succumbing to the collapse and giving up on their past 'good lives'. In the case of the ventilation corridor constructions it seems to be the same; keeping them from development is a form of clinging to the remainder of a city landscape that was extremely imperfect, but that was ostentatiously built for all the people.

Smog meets planning

It makes little sense to study infrastructures alone; they are always entangled with other infrastructures and life worlds (Mol and Low 2002, Bennet 2005, Anand 2011). Vertesi's (2014) work on seamful spaces provides an interesting way of theorizing the overlaps among the infrastructures and it is exactly through the frictions caused by an ever-increasing seam in such entanglements that the case of the corridors rose towards salience in Warsaw. However, it was with the looming pollution crisis the tipping

[68] One of the early comments that this chapter received was that I should be careful about idealizing the socialist urban planning and the regime's approach to nature. After all, during the late 1980s, a significant part of a Polish territory suffered from conditions that neared environmental catastrophe and the city of Warsaw itself had to grapple with harmful industrial pollution. The voices relating socialism and environmental pollution (Schmid 2015) or pointing out the productivist policies that included large-scale exploitation of natural resources (Lowy 2005) are correct to an extent. However, there is no reason to throw out the baby with the bathwater, as for the purposes of this text the data clearly showed that inhabitants demand a return to efficient planning and more democratic control of the development, without necessarily romanticizing socialist governments.

point was reached and development within the ventilation corridors has gained tremendous gravity in the public discourse. As my activist friend Marek pointed out, smog has never punched anyone in the face, and thus the sheer fact that in the past few years' people acknowledge the problem as real and urgent shall be considered success of the environmental NGOs. The slow violence of pollution that is responsible for thousands of premature deaths in Warsaw alone has thus been effectively transformed into a regime of crisis, demanding action. At the moment, air pollution in Warsaw is relatively horizontally spread both geographically and class-wise, with the wealthy neighbourhoods sometimes paradoxically suffering from worse air conditions than the poorer ones. Projects such as Marina Mokotow and inhabitants' new active search for the 'good air', as demonstrated above, might however change that very soon.

Infrastructures are intimately intertwined with the daily lives of the inhabitants, especially in dense urban environments, where both their functioning and eventual collapse can be most readily felt and studied. It may be true that the breakdown of infrastructure in question has not been accompanied by any spectacular drama; the slow dismantling of the wedges cannot be compared to failing waterworks or falling bridges in terms of its visibility. However, it is here that the 'infrastructural lives' (Graham and McFarlane 2014) in the city can be observed, providing a peek into a more symbolic level of our engagement with infrastructural systems and their use as a hybrid entity that spans through socio-material ways of dwelling and the everyday practices. In this case, it is clear that the existence of the remaining wedges in relation with the growing concerns about toxic air leads to shifts in how people relate to space in Warsaw, making the ventilation terrains extremely desirable and extremely contentious. There are few places where the tragedy of the commons would be more readily observable, as satiating the desires of the wealthy inhabitants could destroy the very thing that the buyers hoped for. It is crucial to note that the sudden rise in visibility of the corridors cannot be attributed solely to air pollution. The coal and automobile industries and other processes leading to the infrastructural violence (Rodgers, O'Neill 2012) that caused the 'seam' to expand surely were the main culprits. However, as the next section will show, the focus on the wedges was also enabled by a shift in the inclinations of the inhabitants and boosted thanks to the unique nature of the wedges.

Towards withdrawal

When it comes to infrastructure, the issue of visibility, lack of it, and its various mobilizations are often discussed. Some have claimed that one of the inherent features of infrastructural systems is that their visibility only comes upon in a moment of crisis and their breakdown (Star 1999, Larkin 2008), others have shown that this is not always the case, as infrastructures often serve as shining symbols of political and technical might. In this respect, the case of the wedges peculiarly stands out. It would be wrong to argue that they were forgotten; after all, the urban master plans have included them for hundred years with only minor alterations. At the same time, their sheer size has made them invisible as a system, despite being perfectly accessible in the urban space. What is easy to see on a map might get blurry on

the ground and the story of wedges proves that; at many instances, I had to explain to my informants (who were often very concerned about the wedges' future), which terrains exactly they entail in one case or another. Very often, in cases of the new construction projects, it was the issue of green space that was identified and problematized first, only followed by the air corridor label later.

One thing is clear; in order to make their way into the mainstream debates, a crisis had to arise. Without the air pollution crisis narrative, the wedges would never play the role they play now. In a sense, only the employment of a game-changing smog discourse has revealed them as ventilation corridors in demise. Nobody in Warsaw would claim that in case the ventilation corridors had been left intact, the air pollution issue would be solved; the inhabitants and activists are wary of the fact that it is more complicated than that. Nevertheless, the smog scare reinstated them as a system worth fighting for and more importantly, as a symbolic tool to operate with. If the idea is that the ventilation corridors make sure that there is enough fresh air for everyone, the breakdown of the clean air illusion went hand in hand with the realization of a breakdown of the infrastructure. In the words of Marek:

> "It's been there for hundred years, such an elegant solution. It's not only about stopping the sources of pollution; it's also about ensuring that the air moves, for whatever it's worth. And look, they build there, whom does it serve? Only the developers."

The built environment is known to be very sturdy, keeping its position as the world around it changes. In this case, the negative material presence (or in fact absence) of the ventilation corridors in the city is curiously exerting considerable influence even after it had been almost destroyed and possibly beyond ever functioning for ventilation purposes; "for whatever it's worth" as Marek said. In his influential review article, Larkin (2013) invites readers to think about infrastructures also as of vehicles of desire in a process he calls 'doubling of infrastructure'; decoupling its technical function from the poetic one. Infrastructures commonly acquire fetish-like dimensions to them, transcending or outright replacing their manifest function.[69] The corridors too are closer to a symbolic device. They still somehow do exist and they most certainly do exist in the planning documents, but they have become more of a claim-producing basis than an actual mechanism that could by itself facilitate change in the pollution situation.

Infrastructures have the ability to condition sensibilities throughout the political landscape (Chu 2014, Ranciere 2006). As such, it is absolutely crucial to understand them not only as mere reflections of the governing powers and their interests (Rabinow 2003, Scott 1998), but also as systems that can go beyond that and indirectly or directly become tools of subversion that can actually change or at least

[69] In this sense the case of the corridors could be set in dialogue with the work of Lea and Pholeros (2010, 191) on aboriginal housing. They described a case of aboriginal communities who are housed in a kind of a Potemkin village by the government, instead of actual housing, producing a new 'aesthetic order' instead of decent homes to live in. For example, even though piping in the housing in their case has not been attached to the sewers, it has nevertheless worked as a representation that could be audited and written about. However, while aboriginal housing story is a sad example of colonial-like governance, the air corridors as a symbol could be used as an emancipatory tool in urban politics.

amend the existing political rationalities. The wedges have become a particularly apt symbol for the desired change in the mode of governance capable of redefining 'common sense' (Chu 2014) in urban politics. Infrastructures are often understood as foundational systems of reference for and by the whole society (Humphrey 2003); the fate of the green corridors in the research thus too mirrors the possible larger shifts in Warsaw and in Poland in general. Rarely there are protests that would deal with the corridors alone. Instead, the corridors became a sort of a device or a signifier that becomes mobilized when the issues of air pollution or development in Warsaw are discussed. "And on top of that, they built over the corridors, so who's surprised now?!" the sentence I heard from a pensioner in a park ranting about the toxic air, but also one that summarizes the mood among the inhabitants.

As I outlined earlier, the green corridors have a unique character; they do not require upkeep or engineering; all that is needed is to withdraw construction activity.[70] However, as the paper has shown, even such a minimum requirement seems untenable vis-à-vis the actually existing neoliberal regimes in the CEE region. The market desires centrally located development surrounded by greenery and the authorities have not been able or willing to regulate this process. Koslov's (2016) work on communities relocating from the seaside areas amid rising sea levels interestingly captures such a dynamic. He discusses a case of grassroots efforts of people that acknowledge the necessity to abandon their seaside homes, but also to abandon the unsustainable way of life, linking it to efforts to democratize space along the lines of the right to the city (Harvey 2012). In his case, the reinstating of the unregulated coastline would create a buffer to contain water, helping a larger community, which he frames by a concept of 'retreat'. The material conditions thus gave rise to a formulation of larger political demands in a similar way to my proposition of 'withdrawal'. However, the Warsaw case pushes Koslov's work further, as the social and material claims raising from the engagement with the wedges cannot be so easily linked to a sense of an imminent crisis and endangerement; the progressive political agendas get intertwined with the materiality of the corridors, turning them into allies in urban struggles. As such, the corridors and calls for their preservation echo a larger political set up; challenging not only urban development, but what is deemed a senseless developmentalist and extractionist policy orientation that has been present in Poland for decades. It is through the heavy funding of the coal extraction, reluctance to explore alternative energy sources as well as extensive investments in automobile infrastructures coupled with a culture of single family housing that the air pollution came about in the first place. The corridors thus work in a mimetic way, with the policy demands reflecting the characteristics of each other, 'taking the character and power of the original', almost erasing the difference between the representation and the original (Taussig 1993, xiii).

[70] In Warsaw, for a long this should not have been such a problematic request, as the low density of the city as well as numerous gaps in the urban tissue provided plentiful opportunities for new developments and as mentioned earlier, the master plan actually sanctions much more space for potential development than the city will likely ever need, based on unrealistic population growth projections.

Literature on infrastructures almost universally assumes that they are hierarchical, serving predominantly particular groups of people, best exemplified by a maxim that "unequal power relations are as likely to be `inscribed' in the air ... as they are to be `embedded' in the land" (Swyngedouw 2009b, Keil 2000, Bryant, 1998, 89). While all that is true, it has been established by governments around the world that air should at least in theory be a public good (Veron 2004, 2097). Air as such escaped commodification, but the land has been there for grabs. The ventilation corridors might have worked and might work, but their functioning is simply too diffuse to benefit identifiable groups of people. The case of wedges thus shows that infrastructures that do not carry clear hierarchies inscribed in them face harsh odds, despite the official plans. Swyngedouw (2010, 222) shows how enthusiasm for eco-technologies often equals "producing a socio-ecological fix to make sure nothing really changes". Ironically, his description would fit well if he tried to describe the introduction of the system in 1916. However, looking at recent years, the fix itself got under attack and it seems that today, fixing is not sufficient. Even the fixes must have clearly defined beneficiaries; otherwise, their future is more than uncertain, as is the case of the wedges.

Doubt what

> "I haven't found any scientific basis that would substantiate a rationality of the ventilation corridor theory"
>
> Michal Borowski, former Head Architect of Warsaw (2003-2006) in a television report[71] (tvn Warszawa 6.3.2012).

Once I started looking for some data on the functioning of the wedges and hoped to find people who would explain their mechanism to me, I felt like I hit a wall. Some experts I talked to were only willing to give their estimates, some appearing sure that they have a role in ventilation, others definitely unconvinced. One geographer/environmental expert told me that the corridors simply are a 'matter of tradition' and that nobody really knows if they work. Many were strongly convinced that the talk of their lack of ventilation effects is just a communication strategy to allow for more construction and angrily described to me how the 'city already knows what the results of whatever research on corridors will be'. The whole confusion around the system was quite flabbergasting for me; the corridors are included in the plans covering a significant portion of the urban territory and yet there was no evidence substantiating their existence?

The idea of the wedges has not been enjoying much popularity among the bosses at the city architect's bureau either. The bureau is currently headed by progressive, former activist architects, who proclaim that the spatial development of the city should benefit the widest groups of the population. Visibly

[71] He added that clearly the Vistula riverbank is beneficial for air circulation and should be protected and that there certainly is value to some green areas in the city, e.g. Pole Mokotowskie (a major park in the centre). But 'that's it' he said, mentioning that there are no researches suggesting that building within corridors could have negative effects on the air quality.

sceptical of the wedges' functioning, they have preferred discussing future policies on urban densification based on mainstream urbanist trends in Europe as well as a shift from sweeping master projects towards more tailor-made, partial green infrastructure solutions.[72] Basically, they would agree that accessible greenery is needed, just not necessarily in the form of the corridors. A vice-director of the bureau I spoke to would argue that the city should aim for a more tailored approach to greenery, creating parks and patches of different sizes and characteristics and invest in their proper maintenance (as opposed to large disorderly terrains that are often left without any upkeep).

In order to finally find out if the wedges work and clearly bothered by the lack of hard data that would decisively describe the functioning of the corridor system, the bureau eventually commissioned a major study[73] on all sorts of aspects relating to the urban climate by an external company. The climatic study revealed that the wedges are effective in alleviating urban heat island. However, when it comes to air ventilation, they only work within their own area, without spreading out the air to the built space. Furthermore, it showed that the wedges actually work reversely especially during the wintertime, when the fresh air is most needed, as they pump in polluted air from the suburban villages, where people often use low quality coal and sometimes even thrash to heat up their homes. This is again mostly due to the heat island effect and the inevitable physical laws leading to an exchange of warmer and colder air.

The two arguments partially contradict each other and as prof. Oszewszka at the cartography department exclaimed: the wedges cannot work reversely; it means they simply work. According to her, even if channelling in dirty air in wintertime turned out to be the case due to the coal and thrash burning in the suburbs, stopping the ventilation altogether for good is not a solution either. It is true that the corridor system presupposes clean air that could be pumped into Warsaw from the surrounding areas of the city. By reshaping the corridors to accommodate the current situation, a baby would be thrown out with the bathwater, as the city would adjust to a (hopefully) temporary air pollution distribution map at the expense of future ventilation options. She suggested that it would instead be much more fruitful to abandon the pervasive cityism that keeps solutions confined to the urban borders and try to work in wider alliances and boost cooperation with neighbouring municipalities.

[72] As another newly employed activist told me: 'The time of big and burdensome projects is over, now we're more humble, we're focused on doing something closer to acupuncture.' This approach inspired by the tactical urbanism trend (Mould 2014) gained popularity as a widely accepted planning strategy especially after the global financial crisis, mirroring the widespread lack of funds for grand investments as well as work of Jane Jacobs and the aftermaths of Florida's creative city fantasies. One of the local urbanist legends, Krzysztof Domaradzki similarly suggested that the time of major projects is over. "Currently it looks like there is none (referring to a chance of large-scale designs). Simply put, the conditions for such urban planning are not present. New (major) designs could come along, but there would have to be a very strong political will – maybe in a way even stronger than the one present during the Stalinist period" (Domaradzki 2015, 49).

[73] The study was rather costly, as the topic required advanced modelling and expert knowledge. According to some of the informants, this was also a reason why there have been no comprehensive data available until then.

Some guidance on the current thinking at the Head Architect's office that is in the process of preparing a new master plan could also be seen in Figure 19. lifted from a text distributed as a part of the 'We're doing a research!' conference organised by the office in 2018. While one section of the brochure cites from the upcoming study[74] suggesting that the ventilation does not really work beyond the heat island alleviation, infographics a few pages earlier suggests that the problem actually is the air pollution pumped in from the suburban areas. One way or another, the consensus of the planners has been that the corridor system is little more than a historical artefact of the planning processes.

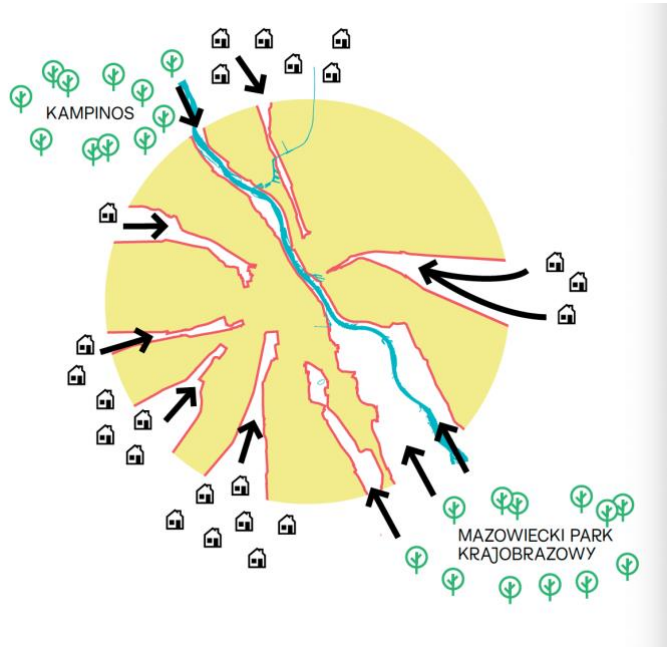


Figure 19. Infographics from a conference brochure 'We're doing a research!'

From my interviews it became clear that the planners themselves do not know how to communicate such results. On the one hand, the study proved their suspicions about the century old system and opened up possibilities for a cautious (and in the best scenario) properly planned construction on the empty lots within the corridors. But on the other hand, there has been a worry about the reactions of the public, as the report would surely be perceived as an attempt to exonerate the city from the wedges' contention and provide a green light for the new development projects. I even heard this concern from one of the top officials at the bureau. And he was not wrong, as the accusation about the city being complicit with developers' demands has been routinely brought up in my interviews with critics.

This sentiment would certainly be reinforced by the fact that due to lack of funds, the research only provided a detailed model of the air flow in some of the corridors. The highly specific data for some of the ventilation corridors were conceived as a sufficient illustration case that could be transferred to the rest of the wedges. And by mere chance or not, the detailed modelling included one of the Southern

[74] At the time of writing, the full results of the study still did not seem to be accessible online, even though they are available upon request.

wedges, where Marina Mokotow is located. The choice automatically gave way to suspicions about why it is exactly the wedge with possibly the highest land value that the study focused on, de facto proclaiming it suitable for further investment.

Figure 20. The top sign reads 'No to suffocation of Mokotow (note: a neighbourhood in Warsaw)'. The bottom one reads 'We won't allow filling air corridor with construction'. 7.1.2020 (Miasto jest nasze FB page)

Maciej, an activist from Warsaw without Smog group (WBS) is among the people who acknowledge the results of the climatic modelling research and refuse to link air pollution and the destruction of the wedges. In our interview, he stressed that just because they do not seem to be helpful with air ventilation, it does not mean that construction within their territory is acceptable. He suggested that it is a "scandal for a completely different reason as the area should maybe remain as a park or something… …it's much more about the urban heat island, lowering summer temperatures, the mental health of citizens, trees are very important' but let's not defend (the corridors) with an argument that's not so clear." One urban activist from a different group even complained to me about feeling pressured to discuss the corridors, just because they became 'a fashionable topic'. He expressed his worry that if they are revealed as useless for air ventilation, many of the issues linked to it such as the lack of proper development regulation might get buried alongside it.

However, most people, including urban activists, let go of such nuance, being aware of the new research or not. A picture of the signs made by an urban activist group Miasto Jest Nasze as late as 2020 clearly shows that the green wedges and air pollution issue were very much in use in their communication in

the urban development struggles. In the case that the signs refer to, the activists created a longer argument, carefully listing how the proposed development would be in breach of the planning documents and development needs of the area. However, for the signs, the ventilation corridors were chosen as the punchline that would surely be more galvanizing than the legal objections.

The years of not being sure if and how the corridors work and speculating about why there is a lack of knowledge on such a major issue in the city led to a peculiar domestication of the wedges among the inhabitants. While inhabiting a city, people tend to appropriate the space as well as the issues inscribed in it for their own sake. The case of wedges is a peculiar example that shows how even doubt and (possibly) produced lack of data can become a resource that is open to reinvention. Doubt has often been utilized by those in power as Oreskes and Conway (2010) have shown, but it does not need to be a one-way street. In their research, it would be the 'merchants of doubt' from the big tobacco who were intent on keeping the controversy going, turning an otherwise straightforward cancer research into a diffuse, confusing topic. In Warsaw, it is almost the other way around. A difficult and what many would consider a rather boring issue of urban development plans, together with extremely abstract and largely invisible air pollution could be channelled towards the very material and tangible corridors. The doubt does not necessarily need to dilute the topics to bury the dissent; it can just as well be used to speak back.

Even if for some it might seem far-fetched or outright irrational, the air corridors have a capacity to fix the topics that are otherwise hard to grasp, acting as a symbol that exceeds its power far beyond actual air circulation. In the chapter on measurements, I have argued that it is the citizen measurement stations that bind the air pollution topic to the urban space. Here, a similar process can be witnessed, though in the case of wedges, the intimacy of knowing the air at one's home is replaced by a piece of infrastructure. Maciej, otherwise critical, unknowingly articulated why the wedges do not seem to go away – the 'scandals' that he spoke about tend to stretch through scales and topics, binding the corridors in multiple ways. If one string breaks, the others still stand, bundled together.

In his work on material politics, Barry suggests that even though 'the behaviour of materials' is sometimes understood as corresponding to the more general social processes, we should be careful about attributing inherent politics to the materials themselves. Certain issues and problems, just like some materials, do become political, but it is crucial to always pay attention to the processes behind such shifts (Barry 2013, 152). In other words, technologies and technopolitics are not one and the same (Hecht 2011). Technopolitics must first be created by people, who would use them for political aims in one way or another. The corridors became linked to a sentiment of well-being that is being taken away from the inhabitants, becoming politicized in a way that far exceeds their material impact, they became 'alive politically' (Massey and Warburton, 2013, 264, Amin 2014, 138).

Sociotechnical imaginaries that are produced alongside the infrastructures often do present our "futures as they ought to be" and are not necessarily too concerned with the "world as it is" (Jasanoff 2015, 329). The orientation towards a future ideal is crucial here, even though it might be unclear what exactly it should look like or what it is and importantly, whether ideal works at all. For many inhabitants and activists, the present form of development in Warsaw is too unbearable not to demand plans for some kind of a different future. 'No to suffocation of Mokotow' on the demonstration sign in the picture thus should be read as a message that goes beyond mere protest against yet another construction within the air corridor. It is a 'no' to the corporations and the state routinely acting in a way that is detrimental for the vast majority of inhabitants, disregarding the regulations along the way. In both urban planning and managing air quality.

Conclusion

> "Everyone wishes to live in a small housing estate, somewhere in the middle of the green areas, right? I would also like that. But even more than that, I would like to enjoy the fresh air in a city for a while. I don't want to breathe the fumes and suffer from artificially elevated temperatures. There are special requirements and major restrictions to the ventilation wedges' territory. They don't tolerate dense construction nor high buildings that the developers dream about, thrilled upon seeing such terrains. Because of that, the city has a greatly important role in protecting those areas, maintaining the greenery that can be found there and shall under no circumstances succumb to the pressure of those, who'd like to get loaded on the terrains" (Mazur 2017)

The quote from a Warsowian urban blogger sums up many inhabitants' sentiment about the air corridors. There is clearly no doubt in her mind about whether the wedges work, about who is supposed to work in their protection, and importantly, which actors launched an attack on their integrity. Published in 2017, the post reflects the time when people started wondering out loud if there really is not more that could be done to ensure good air for the city and if the limitless development boom should not be limited after all.

The chapter showed how a unique kind of green infrastructure embedded in urban planning documents became a symbol of demanding such boundaries. The ventilation corridors as green spaces that should be accessible and where air should be floating freely have been targeted by development for years, but the air pollution highlighted their proclaimed role and kept them in the forefront of inhabitants' thinking about their city. Intriguingly, the wedges became one of the catalysts for the new approach to urban space, demanding respecting the planning mechanism and putting a brake on the 'confetti' constructions that serve the few, not the many in the city. The uniqueness of the wedges as a device used in urban struggles could be found in the very nature of the system that I call withdrawal infrastructure; one that

exemplifies a possibility of wellbeing without extraction, simply with a bit of enforced planning. Because of that, the ventilation corridors became a perfect tool to articulate otherwise abstract issues, linking different scales by a crumbling system that paradoxically serves as a tangible entity without having the materiality in a strict sense of the word. The negative presence of the wedges in the city curiously played along with the inhabitants owning up the doubt about their functioning. As it turned out, whether they actually work or not is of a secondary concern and the diffuse knowledge about them does not necessarily equate to questioning their usefulness. In a time when doubt is often used and consciously produced as a (mostly) right-wing political strategy, the uncertainty about the wedges shows that there are two sides to this coin and reveal it as a potentially emancipatory tool.

At the time of writing, the corridor system continues being slowly dismantled. The pessimist would argue that the air corridors could not withstand the pressure of neoliberalisation and were too easily converted to serve in 'the capitalist process', effectively erasing their earlier histories (Golubchikov et al. 2014, 617). However, I believe the chapter has shown that on the contrary, their legacy got reactivated in a new way and the corridors serve just as much as a piece of green infrastructure as a symbolic trope that galvanizes political discussions. Amin (2013) is among the authors who optimistically see infrastructure as one of the possible remedies for the increasingly uneven cities. As all the big universals that made lives more open to bridging the difference seem to have collapsed on our heads, he calls for a 'politics of staples' that might bring back at least some common interests and obligations as mediated through infrastructure. While the material staple of the wedges might be falling apart, corridors as a political device are more alive than ever. Haunting the map of Warsaw and the minds of the inhabitants, the ideal of extensive green grounds serving everyone is not going anywhere, ventilating the actual air or not.

6. Million Trees for Warsaw: Managing Pollution through Green Renewal

Introduction

Figure 21. A vegetable patch on a crossroad (picture by author)

In May 2018, the deputy mayor of Warsaw put on a pair of gardening gloves and personally helped with planting the herbs, tomatoes, and other vegetables in a new garden patch that replaced the old flowerbed in the city centre. According to a newly established Greenery Bureau director, who was also present, the aim of the vegetable garden was to attract the interest of the Warsovians and tourists, to remind people of the up and coming community gardening scene in the city as well as to show how the food we all eat everyday looks in the garden. “Have you heard about the carrot at the crossroad? One should know better than to try to eat it,” my friend, a community gardener, commented with a smirk when we met nearby later.

The veggies planted by the deputy mayor truly would not be exactly fit for consumption, as the newly started lot was located just above an 8-lane, perpetually congested traffic artery that crosses the city and pollutes the surrounding streets with great amounts of dust, fumes, and noise. One could hardly find a better way to illustrate the developments in the city, where the authorities turned towards urban greening amid an air pollution crisis. The tomatoes in the picture look good, but surely nobody would eat them; in effect, they were just a prop.

The following chapter examines how greening and greening spectacles serve as a repair technique in a polluted city. It addresses the way in which the authorities engage in greenwashing[75] as a form of selective disclosure of information about environmental performance; highlighting achievements while concealing the downsides (Kassinis and Panayiotou 2018). And in the case of Warsaw, not only highlighting achievements, but also actively producing them in the urban space. In Poland, there is a special word for such conduct, *ściema*, meaning a dishonest trick, a smokescreen activity. Attempting to attract the citizens' interest to a vegetable patch just above the urban highway that is not about to be scraped or at least reduced nowhere in the near future is only a bitter example of how the Warsaw city hall has tried to use the green urban renewal to manage visibilities in the capital by skillfully tapping on widespread citizen affects as well as trends in global capitalism. The projects like 'Million Trees for Warsaw' or a candidacy for the Green Capital of Europe that will be discussed below serve as prime examples of the attempts of the administration to shift the citizens' perceptions of how green the city is without responding to the core causes of the crisis.

Political ecology literature has extensively examined how environmental degradation is often painted as an opportunity that can be contained through technical processes of rationalization and restoration. Pollution and actions that are detrimental for the environment are commonly presented as redeemable through a simple compensation by restoration activity elsewhere, giving rise to a whole 'economy of repair' and opening up new opportunities for capitalist expansion along the way (Fairhead et al. 2012, 242, Sullivan and Hannis 2015, Buscher 2014). The chapter takes the argument one step further, arguing that in Warsaw it has been possible to witness a depoliticizing process of producing a sphere of green policy as a whole, allowing for a creation of an array of possible 'green' actions in the city that are presented as interchangeable and effectively commensurable. Instead of substituting numbers on the spreadsheets or claiming restoration activity in distant places, offsetting is carried out by substituting the imagery and controlling the material visibilities. The nature of air pollution plays a central role here, as it is hardly possible to perfectly track the urban air. Air is a free-floating and ephemeral entity that remains invisible unless truly extreme conditions are reached. Pollution can obviously be measured and described in charts presenting the substances against what is deemed to be the safe levels. Howeve, in everyday life, air can in fact be quite easy *not* to think with, especially if it is poised against a wave of images of the green city that the authorities have been propelling.

Drawing on Debord's society of spectacle, Igoe (2010, 376) coined the term spectacle of nature as 'the mediation of relationships between people and the environment by images' set within the global

[75] There are many definitions of greenwashing. Especially in research on corporate strategies, it can be understood as a 'misleading communication intended to positively influence stakeholders'… beliefs about an organization's actual environmental performance' (Lyon and Montgomery, 2015, 224). A more direct definition perceives greenwashing simply as 'poor environmental performance but positive communication about environmental performance' (Delmas and Burbano 2011, 65). However, the notion of greenwashing that is closest to what I argue in the text draws on Kassinis and Panayiotou (2018).

economy of appearances. He argues that images are no longer only representations of the realities, they have become indispensable parts of them. And as Debord noted, the spectacle provides an illusion that a fragment of a reality is actually a whole, inevitably leading to alienation and detachment (1967, p.1). The chapter proposes developing the notion into a 'spectacle of repair', a carefully calibrated social technology of governance aimed at managing the environmental degradation through a control over the images. The spectacle of repair in this case not only signals mitigation but also co-constitutes the rise of the green city field in Warsaw. Put differently, even though some might interpret the new turn towards the urban greening as a typical example of 'roll out environmentalism' (Keil and Boudreau) simply responding to the environmental degradation caused by the detrimental results of the earlier version of neoliberal capitalism, the shifts in Warsaw do not attempt to address the pollution per se or move from earlier modes of economic development, but rather create a second playing field, where the sustainability and green city policies might appear to be winning. By altering the actual lived, material world, a new kind of self-perpetuating reality of reflection is produced. Due to such framing, city hall has been able to successfully present an image of Warsaw as a green city, despite its elevated levels of pollution, and, even more remarkably, to present its actions as a proactive change, revealed in common inhabitants' comments on how 'something is finally being done' in the city.

The chapter outlines the greening projects introduced by the city hall. The projects are used as examples of a spectacle of repair in the public space and it is argued that the authorities have relied on a management of the visual in order to 'offset' the environmental degradation without resorting to numerical representations. The discussion concludes by an analysis of the 'green' associations of the Warsovians that aid the production of the green city visual.

Invisible Air

To paraphrase Nixon (2011), the violence of air pollution is so slow in exerting effects on the population that it has been approached as a problem only when materialized. In the case of Warsaw, visible smog only appears under certain weather conditions usually in the wintertime or sometimes during the sunrise and the sunset. The common summertime occurrence of the exceeded air pollution standards has received little attention by the city and it is indeed not reported by the media or problematized by most of the citizens. It is slowly changing due to the introduction of apps informing the citizens about the air conditions and therefore providing the tangible visualization of what is otherwise difficult to spot. At the same time, in the summertime the inhabitants consult them very rarely and continue perceiving the air pollution especially as a smog problem that occurs largely in the winter months.

Air pollution has a peculiar quality; being largely amorphous, invisible, formless, and free flowing (Broto 2015, 94; Top 2008; Tsing 2015), the associated risk is rather diffuse and symptoms in ill bodies are difficult to attribute to pollution only. The affected inhabitants suffering from lung and circulatory

diseases cannot easily raise claims against the authorities or specific businesses, as would often be the case with less scattered forms of contamination[76]. The framing of a scale of the issue thus can be controlled and played with, sometimes to a considerable extent. Images have the power to incorporate order and lend it their positive support (Debord 1967, thesis 8) as well as create a powerful reality that is beyond questioning. Peter Csigo (2016) elaborated on a current refashioning of politics in the times of social media as a ceaseless effort to gratify the demands of the public that are however only imagined, as the representatives attempt to guess what a popular opinion about a popular opinion is at any given moment. Mirrors in mirrors similarly arise in Warsaw, as an investment in greenery seems to be a response to the public, a tool to reshape the public opinion, and a very material spatial intervention generating its own responses all at the same time. And as the following sections will show, the inability of the city to alleviate pollution got translated into attempts to produce an altered reality through reliance on 'green' projects and activities that have high public visibility, acting as a counterpart to the 'invisible' polluted air.

Million Trees for Warsaw

Environmental issues often become a prime battlefield for the manifestations of state-making and governance as well as a means towards legitimizing certain forms of development (Rademacher 2008, Tarlo 2002, Szili and Rofe 2007). In Warsaw, two processes coincided at the same time: a drive towards tapping in on green city governance and a need to respond to the air pollution crisis. Already in the late 1990s, researchers have noticed the trend of moving away from the green suburban utopias and other forms of escapes from the urban (Keil and Graham 1998). Instead, the municipal authorities around the world started the process of reimagining their cities as greener places to live, often broadly informed by some kind of sustainability paradigm (ibid). Tapping in on some form of urban greening thus stands for embracing an aspiration towards becoming a global city. Simultaneously, the sudden rise of air pollution as an issue of general concern provided a strong impetus for new green policy making. The authorities had to somehow respond to the public pressure despite their initial reluctance to engage with the topic. As described earlier in the dissertation, the uncomfortable roots of pollution made it very difficult to address the causes head on and management of visibilities seemed to offer itself as a more politically convenient approach. Using examples of two major projects run by the Warsaw city hall, I will demonstrate how the authorities merge the two and use spectacular urban greening in order to signal the repair process in the city.

'Million Trees for Warsaw' is a city hall run campaign that promised planting a million trees in a time span of a few years, first until 2020, later until 2023. Without an open acknowledgement, the campaign took on after several similar projects in cities around the world, most notably the MillionTrees NYC

kicked off by New York mayor Michael Bloomberg. The Polish project included asking the citizens to use a special app to inform the city services about possible spots for the new trees – mirroring the increasing interactivity of the environmental campaigns aiming at creating an attachment of the consumers-citizens to the projects in question. The app has been criticized for being difficult to use and people's suggestions were often radically cut down. For example, when I asked Mateusz, an environmental activist with one of the bigger NGOs about the program, he burst out laughing: 'When the project appeared, a colleague in our organization suggested planting 200 trees in the downtown area. And the reply he got from the city was that 8 trees can be planted. There was quite a media storm about it. Can you imagine? They say a million and then it boils down to 8.' Having said that, he agreed that the stance of the city was changing and that they made a visible effort to look for suitable spaces to plant new trees.

Speaking to the representatives of the Greenery Bureau[77], a newly formed city institution responsible for the maintenance and development of greenery, the employees suggested that a goal of the project was mainly to raise awareness and involve inhabitants in taking care of greenery, as a million is simply too much to possibly plant. The campaign officially kicked off in 2015 and was omnipresent for about a year during my fieldwork, marketed on billboards, in buses as well as in the local news, before coming to a quiet end sometime in 2017/2018 and turning into a general label for any greenery-related activity[78].

While it was still on, trees became a deeply contentious topic in early 2017, when a minister of environment in a socially conservative- right wing government secured passing a law that allowed lot owners to fell trees without getting a permit. This led to what can only be described as a felling frenzy all around Poland. In Warsaw, the felling even touched on some of the green pockets in the city centre, causing a furore in the local media and in the urban activist circles. It is estimated that about 13 thousand trees disappeared in the city within a few months (Jędrychowska-Klimczak 2017); with no control and without an obligation for the developers to chip in to the environmental fund.[79]

[77] Marek Piwowarski, the first ever director of the Greenery Bureau, is one of the faces of the green urban projects and received his nomination after his work on creating a natural urban park on the east bank of the Vistula river. He enjoyed significant trust of the public and was viewed as a progressive hire open to new ideas and experimentations. As the Greenery Bureau only started functioning in 2017, throughout my fieldwork period I heard inhabitants commenting on how 'he needs time' to set the institution up, but that he can be generally trusted to do well. As I suggested in the opening vignette, he indeed greenlighted several initiatives that would not be feasible just a few years ago. For example, the Bureau opened a scientific investigation into urban leftover places and ruderal ecologies (see the chapter on urban gaps), supported urban and allotment gardening or took up a fight against drivers using public green spaces as impromptu parking lots. He was asked to leave his office for 'insubordination and inability to keep deadlines' in March 2019.

[78] During my last visit to the field in January 2020, I noticed that the wooden support system for the young trees features the logo of the Million Trees campaign. As I investigated, it seems that the million trees slogan is now used as an umbrella tag for all the tree planting activities in the city. Even though there is a certain continuity, the loud support for the project and an understanding that actual million trees would be planted has not been revived.

[79] Some activists have expressed their feeling that the lost money for the environmental fund was one of the main points that really angered the city and caused its forceful reaction.

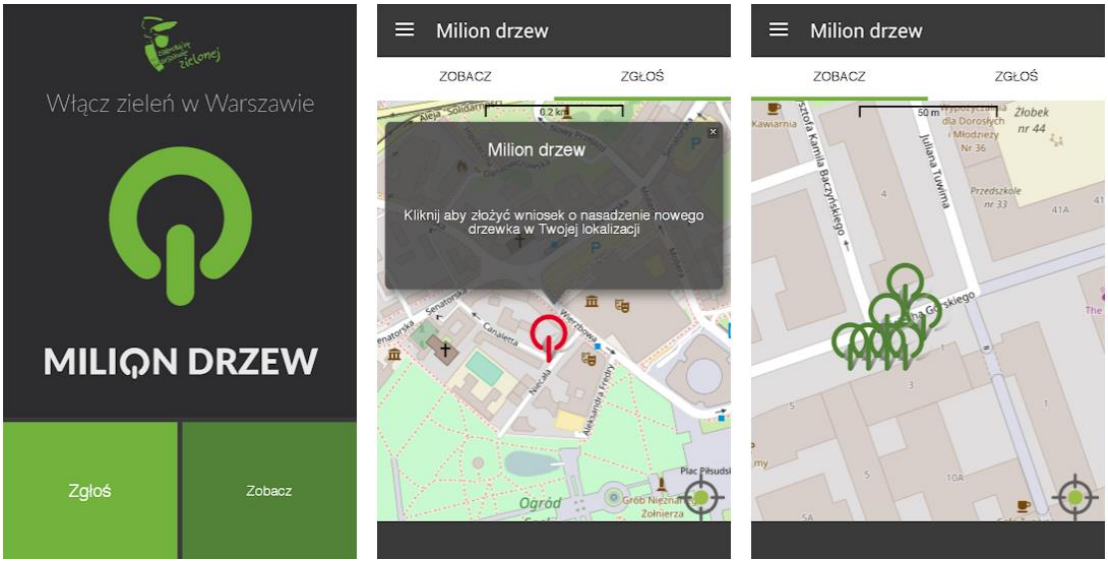


Figure 22. 'Million Trees for Warsaw' app

The liberal city hall authorities immediately used the situation to boost their stakes as a political opposition, portraying Warsaw as a victim of the reckless government that is not only unwilling to regulate coal properly, but also destroying their honest care for greenery. The deputy mayor even organized a protest holding a small tree in front of the national parliament and proclaiming that 'in Warsaw, we count time by fallen trees' (TVN Warszawa 2017). Under public pressure, the law was eventually amended after a few months, halting the unchecked felling[80].

Some of the activist groups were quick to note that the city hall only started caring about the trees, when they felt that there was political capital to be gained with the topic.

> "They cut thousands and thousands of trees themselves. When I did an analysis a few years ago (author's note – under the same administration), it showed that only one third of the number was replanted. It's really mind-blowing that suddenly a tree became such a symbol… I have a feeling that everything is just for show" said a biologist and one of the active members of the NGO Baobab Anna.

However, in spite of such critical voices a number of Warsovians that I spoke to were trusting that the authorities have truly embraced the 'pro-tree agenda'; pressured into it or not.

[80] The upheaval around the governmental decision to relax the rules on the tree felling also points to another unique feature of the case. While this in this chapter, mobilizing the green city paradigm as well as tree planting is discussed as a depoliticizing technique by the municipality towards the Warsaw citizens, it can also be deeply politically charged vis-à-vis the state government. In this way it demonstrates how the employment of governance tools and policies is far from static and gets modified for different scales and purposes.

Figure 23. A young tree with a Million Trees campaign banner (picture by author)

A similar initiative in 2015 saw the Warsaw authorities entering a contest 'Green Capital of Europe', organized by the European Commission. There has been a rat race of the cities all around the world to secure a position in the livable and green cities' charts[81] continually published by the media as well as the consultancy firms. Reflecting the trend, the city hall in Warsaw understood the necessity to play the green chart game in order to be able to pose as a global city and a leader in the region. I learned about the bid after a number of people in Warsaw, activists and random inhabitants, mentioned it to me as an entertaining anecdote. 'Can you believe the audacity?!' laughed a member of the Jazdow community, when we talked about the environmental policies in the city, hinting at a discrepancy between the promotion of 'green' successes and the authorities dragging their feet when it comes to air pollution response.

The bid of the city was unsuccessful, unsurprisingly to many. However, even after the elimination from the competition, the Green Capital PR has not died away and has been widely used within Warsaw and Poland alike. One especially illustrative example is a professionally produced promotional video full of drone footage claiming that 'the greenery is in us', originally used to support the bid. The video

[81] Even a cursory search reveals tens of different green and eco city competitions and indexes such as the 'Sustainable Cities Index', 'Siemens' Green Cities Index', 'African Green City Index', 'EcoCite' and many more. In some cases, it is clear that a visibility goal and/or global city status is reaffirmed simply by getting on the list of the cities, as they are often limited.

showcases the urban natures and environmental achievements of the city that used to be played on the metro. Besides parks and green riverbanks, the video features several Warsovians engaging in a range of environmentally friendly activities such as beekeeping, allotment gardening as well as new public space interventions such as open-air markets and summer cafes. Ironically, even this video oftentimes fails at concealing the less than green aspects of Warsaw, such as when it features an unregulated Eastern riverbank but also shows the de facto urban highway occupying the other side of the river.

It is through the Green Capital bid that one can best observe the reasoning of the city hall on the urban natures. Upon entry, the authorities claimed that they deserve the title especially because of a significant amount of green space in the city, unregulated riverbank – a unique occurrence for a capital city in Europe, a new public transport fleet, and clearing 100 per cent of the drain water. Some of the media outlets would cover the news picking up the city hall rhetoric and commenting on how despite appearances, Warsaw is in fact a green leader in many aspects (Bartowicz 2015). The fact that air pollution figures in the city make it one of the most polluted capitals in Europe would be presented as a major drawback in the competition, but one that could be eventually evened out by the above-mentioned advantages. In the world of the eco-city and green capital charts, this would not be completely out of question. The rankings are mostly created using a number of quantitative 'scientific' indicators that can be added up and compared to produce neat results, supposedly reflecting the range of the environmental policy achievements. And having the proclaimed successes possibly outweighing the environmental air crisis in Warsaw in an EU wide forum would provide a welcome boost for the authorities.

Figure 24. A screenshot from 'Greenery is in us' video

Spectacle of repair and silenced offsetting

William Cronon (1996, 17) famously argued that the separation of the modern world and nature provides us with an excuse to avoid "responsibility for the lives we actually lead". It is oftentimes thanks to the detachment of the consumers and the distant images makes it possible to turn the partial images into an entity that substitutes the whole (Igoe 2010). Tim Ingold (2000, 20) took up the idea noting that "the world can exist as nature only for a being that does not belong there", commenting on the presentations of nature as something exotic and spectacular, yet far away and forever in the distance. However, Warsaw as well as other cases of air pollution in cities allow for the observation of the effects of a collapse of such a duality, as the devastated 'nature' appeared loudly knocking on the door. The spatial congruence of the pollution and the greenwashing project provides for a schizophrenic reality, with an absence of the mediating distance that is often presupposed by spectacular projects. The unruly polluted 'nature' that would be best to avoid is around and in us with an unrelenting intensity. Not breathing is not an option. Abandoning the city in search of fresher air is not an option for most either and even if it was, there are few places to escape to in Poland.

The interventions have thus attempted to take the spotlight off such unpleasant aspects of local natures. Surpassing and overshadowing the diffuse threat flowing in the air, the green interventions promoted by the projects have thus been designed to signal control as well as repair activity in the urban space. Importantly, the two initiatives reveal a shift beyond the usual spectacle, with 'the image that exceeds the object' at its core and beyond simple decoupling of appearances from reality (Katz 2008, 565, Kassinis and Panayiotou 2018, 41). In this case, the material reality of the image, i.e. actual trees, parks, and flowers have played a crucial role in achieving the goal of the policy too, bracketing out the invisible (and polluted) natures, while boosting the visible greenery. The sole visual representation has thus been amended by actual, material greening facilitated through Million Trees and other investments that conceal the anyway invisible air troubles.

Turning to such a management of the visible environment echoes Colomina's analysis of how the Cold War era anxieties and insecurities were reoriented at obsessive controlling of the controllable, i.e. one's household and a lawn (2007) offering an eerie echo of the city hall and the city in this case. Through continuous investment in greenery and a series of projects like the two discussed above, the 'greened' urban space itself has become an anxiety-controlling tool, a spectacle of repair allowing one to forget about the toxic air. Besides appeasing the citizens-voters, who have been horrified by seeing their city in the pollution charts together with the capitals from the global South, crushing their self-image of the aspiring urbanites in a successful European capital, the greening spectacle has also been used in a national political arena, with Warsaw as the last major stronghold of the once powerful liberal party that has still acted as the main competitor to the conservative government. And importantly, it is through the meticulous work put into propping up the green city paradigm in Warsaw that the economy of

appearances can be upkept and to paraphrase Tsing (2005, 57) that the profit can continue being imagined by the international investors[82].

Controlling the image has possibly always been vital for holding the power, however in the recent decades we have been witnessing continuous diminishing of maneuvering space on the outside of the image (Katz 2008, 553). As the pervasiveness of influential greenest city charts has become a social fact, pursuing spectacular green city policies and projects by the city authorities has become one of the avenues towards staying in the global competition among the urban centres. This plays along with Robles Duran's (2018) suggestion that there is no point in blaming the mayors for participating in the neoliberal development efforts; in a current crisis of political imagination, the local politicians likely often experience a feeling of a choice between more capitalism and bust. Neil Smith (2009, 51) similarly argued that the closure of imagination could be perceived as one of the greatest violences of our era, with even left-leaning politicians suffering from the paralysis. And in a city with toxic air that simply could not be ignored, the politicians have clearly perceived their choices on a spectrum of either a simulacrum of a green city or bust.

The projects also reveal a logic of presenting urban natures as a zero-sum game, in which one can gain extra points in one section, simply offsetting another. With green cities and the sustainability fix paradigm as an uncontested urbanist mainstream (While et al. 2004), the greening policies become presented as a package that cities can pick and choose from. Rising in the green city ranks and ticking the green boxes becomes a game in itself, up to the level of one of the mythically green model cities such as Copenhagen or Oslo. While managing the pollution crisis, the environmental governance in the city employed this framework, as a way to conveniently signal the desired message both towards its own citizens and the outside world, while weighing one dimension of urban natures against the other. Environmental problems often get reframed through technical management, accountancy, and surveillance in order to become more easily controllable and more importantly produced in a way that "capital can see" (Luke 2009, Robertson 2006, Adams 2017). The process of assigning monetary value to components of urban natures and its restoration as a part of green policies has been extensively

[82] It is not at all surprising that the heavy investment in greenery in the city has only occured on the public land. The more or less obvious alliance between the capital and the state in regard to capturing natures is not a new phenomenon (Büscher et al. 2012, Brockington and Duffy 2010). The interests of the city hall that needs to secure its competitive position in the global market as well as appease the voters converge with the interests of the developers and investors, who have frequently used the imagery and promises of lush green areas in their information leaflets. For example, one new development in the direct vicinity of one of the biggest parks and within the green ventilation corridor of the city was partially built on a space of former allotment gardens that got expropriated and destroyed, yet calls itself 'Ekopark'. As a rule, the promised welcoming greenery surrounding the new residential areas would mostly be publicly maintained, reflecting similar cases in the region (see Gibas and Boumova 2019). The official requirements for the new development have not been very demanding and even the ones in place have often been enacted in a questionable manner. For example, even though the developers are obliged to include certain percentage of the 'ecologically active space' in their projects, the gravel or concrete crate surfaces used for parking lots do qualify as such. Similarly, the green space requirement is often circumvented by including a green roof during the construction, but leaving it dilapidated and without maintenance once the building is in use.

critiqued in the literature (Sagoff 2008, Kareiva et al. 2011). However, in Warsaw the attempts to calculate the economic benefits of the greenery have remained in the background as a fringe endeavor of some policymakers and scientists.

For example, during a roundtable workshop organized at the Warsaw University of Life Sciences the participants representing a variety of city authorities and institutions were asked to name the most important priorities for the greenery in the city. Air quality improvement emerged at the top of the list as the most popular choice, followed by the heat island mitigation (Szulczewska et al. 2017, 119). For the experts at the university the results were simply a sign that the officials have low awareness about greenery, as the extent to which the trees can actually clean the air of pollutants is not so substantial. Taking a different perspective, it is however possible to argue that the participants were well aware of the widespread belief of Warsovians in the regenerative power of the greenery. Public reactions to the period of lifted regulations on tree felling in 2017 revealed that the policy was widely perceived as detrimental for efforts to halt the air pollution and often directly linked to the reporting on smog fits. It thus does not come as a surprise that the city authorities projected it themselves as a number one function too.

This may relate to authorities rarely openly informing about the new greenery in relation to air pollution alleviation - if the link has already been there, why reproduce it anew. The repair approach in the city does not primarily rely on claims of offsetting the pollution by greenery per-se. Instead, the greening spectacle of repair has effectively tapped on the symbolic connection between the trees and clean air among the public. Getting into a number game would only expose the authorities to criticism or outright ridicule; on a spreadsheet, the trees and green spaces simply are not capable of accounting for the pollution levels. Paraphrasing the work of Marquis et al. (2016) the economy of appearances is deployed to decouple the polluted reality from the green spectacle. The materialities of green areas in the urban space have proven to be a presence strong enough to provide a visual stand-in with appeasing effects, taking people's minds off the invisible toxicities floating around them.

The embrace of a green city strategy has also functioned as a depoliticizing tool, with the underlying mechanisms in the city concealed beneath the surface. Investment in greenery and propelling the green city project is a perfectly non-divisive agenda that allows to bypass complex political negotiations and provides for a great visibility of the actions (Rosol 2014), providing the consumer citizens with an opportunity to go about with their daily lives without changing any of their routines. Green urban renewal is a project that indeed seems to be enjoying a near-univocal support of the citizens, making it a perfect candidate to be framed as a sphere that is best governed through proclamatory expert deliberations, very much like in the case of the 'apolitical' air pollution activists, discussed earlier. Not even the staunchest critics of the city hall would question the greening measures per-se and just point at what they perceive as the hypocrisy of the authorities instead. Swyngedouw described the process as 'a politics reduced to the administration and management of processes whose parameters are defined

by consensual socio-scientific knowledges' (Swyngedouw 2009a, 602). This for instance translates into ignoring or subordinating any consenting views and interests that might not fit the consensus (Rosol et al. 2017, 1714). A widespread acceptance of a possibility of consensual governance in the name of the public good perpetrated by the experts has continued to be deeply rooted in Eastern Europe and directly enabled the existence of such policies. For example, Vaclav Havel, one of the leaders of the pro-democratic changes, was one of the most prolific proponents of such an approach in the region, calling for 'antipolitical politics' and openly showing his distrust of partisan politics. If it has been well-documented that environmental policy making can serve as a depoliticizing tool, in Warsaw the process simply tapped on previously held notions of what a good, 'consensual' governance could and should be.

Green imaginaries

Even though Warsovians smirked at the Green Capital bid or the Million Trees project, they very often moved on directly to praising how green the city is. According to a representative survey commissioned by the city hall, 92 per cent of inhabitants positively evaluated the 'state of greenery' in the city in 2019 (Barometr Warszawski 2019). Image and material reality thus sometimes indeed merge into one, forming a peculiar dream world in which the visual representation took the lead; and such a loop of images can be very strong (Richey and Ponte 2008, 723). I started to understand how efficiently greening in the urban space may work when speaking to a middle-aged working class Warsovian while chilling in one of the green courtyards in the city. He agreed that pollution clearly is an issue in Warsaw, but then expressed some doubts about its comparative scale:

> "Well you know, I used to work in Germany, in the vicinity of Essen and you should see the chimneys there, the smoke… Look around here (pointing at lush greenery around us), that clearly cannot be compared to this".

Perception matters and if industrial chimneys are the ultimate symbols of environmental devastation, the trees would probably be the very opposite. The management of the visual would hardly serve its purpose without the extensive sense-making and affective labour done by the inhabitants that the city hall can rely on. In their research on sustainable urban forest management Peckham et al. (2013,8) analyzed how people predominantly understand trees through their 'senses and knowledge-building processes'. The material benefits of urban greenery usually remain in the rear of people's minds, far surpassed by a sense of beauty and histories that they evoke. In order to successfully propel a green image, the branding must always be firmly rooted in local narratives and be easily recognizable for the inhabitants. Simply put, there must be a hook that ties the project together and, in a way, has the ability to domesticate the green agenda in Warsaw. This section will focus on exploring some of such local hooks that enable the rolling out of the projects like Million Trees in Warsaw. I argue that the citizens'

consent regarding the green city agenda can be linked to the prevalent imaginaries of what constitutes a good public space (Çaylı 2019, Caprotti 2019) as well as to the deeply entrenched myths about the city. And such visual associations have allowed the authorities to circumvent the otherwise commonly used strategy of backing up their offsetting actions with numerical data.

One crucial socially embedded imaginary is linked to a myth of Warsaw as a city phoenix that rose from the rubble after the WWII destruction. Older Warsovians speak of the post-war times as an era of great hope, often symbolized exactly by the greenery taking over the ruins. My elderly neighbor, a former ship captain, whom I always met in the elevator with his old corgi dog was born exactly nine months after the liberation of the city and he was the first one to tell me the story. He would vividly describe how his parents recalled how during the first spring after the war, the plants started shooting around the city, signaling the new beginnings:

> "The only hope there was, even before they started rebuilding, as spring and summertime came, the greenery was fighting through the rubble... the broken trees, the parks that remained… it was easier to be optimistic, my parents told me, because you could see how the greenery awoke and the city might be awaken as well…"

He himself claimed that he could remember how as a young child in a still rather destroyed city with not much to do, he would spend time in the green areas around the river or in the parks, as they were the ultimate and to an extent the only free time outlet one could find so early on into the reconstruction process.[83] "The Lazienki park for an elegant stroll, the Vistula (river area) to run around, you could choose to your liking…" It is therefore understandable that there is a poetic link between the enhanced greenery and a feeling that 'the city cannot be doing so badly' as my neighbor remarked sitting in a lush green courtyard when I tried to ask him about the pollution. Ironically, this process has not been confined to the post-war era but repeated itself almost half a century later during the disintegration of institutions and industries in the recent decades after the fall of socialism. Areas that used to be busy urban spaces fell into disarray, abandoned or semi-abandoned despite being surrounded by the city.[84] Once again, the 'vagabond' properties of the urban natures (Clement 2011) served as a reminder that life will find a way despite the violence of the capitalist transformation. Even if this time around, they signaled unraveling destruction that few could see ending soon rather than bright new beginnings.[85]

[83] Lachmund describes a similar experience of 'rubble vegetations' in urban areas that got destroyed during the war as an inherent part of memories of a post-war generation in Germany (Lachmund 2003: 235).

[84] One especially striking example that can be found in the close vicinity to the city centre is a former sports complex SKRA. While parts of it still serve for sporting activities of the athletic and rugby club, most of its sprawling grounds are left to rot. As one artist remarked, 'now it belongs to the foxes'. Besides foxes, its uses range from an improvised parking lot through an attractive background for teenagers' hip hop videos to hideaway for the homeless.

[85] For a more extensive discussion of such spaces, please see the chapter on 'gaps' in the city.

The welcoming of the new beginning in the form of new life shooting through the rubble found its counterpart in a persistent power the idea of Polish nobility. Addressing this entirely different, yet a pivotal dimension of the dreams of the public space, Kacper Poblocki (2015) wrote about post-war Warsaw being modeled based on imaginations of the Polish gentry, whose ethos never really disappeared among the elites despite the country turning communist. In his essay, Poblocki reconstructs how the working class as well as urbanite histories in Warsaw and in Poland in general were actively suppressed during the reconstruction process, deemed 'not Polish' enough to be worth bringing back. According to him, the rebuilding process of the old town was guided by the idea of a salon, with streets serving more as a sleepy[86] catwalk than a potentially messy public space, requiring constant clean up.

Fast forwarding several decades to the heyday of neoliberal governance, similar imaginaries of propriety allowed for a Giuliani-inspired purification of public space in the 2000s, of both the actual trash in the streets and the unwanted small hawkers, homeless and drinkers in the heyday of neoliberal governance. And even if it is difficult to positively identify the link to the air pollution only, as the process started before the pollution scare, the continued emphasis on keeping the urban space clean and well-maintained has played along with the enhanced greenery and flowerbeds all around the city. In the interviews, both the officials and the citizens often mention this aspect, favourably comparing Warsaw to the 'West' with regards to the cleanliness of the city as well as to the considerable amount of greenery. My research interestingly shows that the demand for such propriety has been adopted across the social classes and is thus not limited only to middle class sensitivities. Taking Poblocki's claims seriously and building on my fieldwork experience, it is obvious that a widespread contemporary concern with cleanliness could be linked to an almost universal embrace of such bourgeois yearnings after the fall of socialism. As such, the city hall has been responding to a general demand for a specific image of what a Polish capital should look like. It has not only been cementing its position of power and propelling the green brand that is so valuable in the age of the global green capitalism (Kunth 2016), but also providing the Warsaw inhabitants with an opportunity to upkeep their perception of themselves; using the material urban landscape as a repository of meanings, which are conveniently evoked in times of an elusive air pollution crisis.

[86] Joanna Kusiak (2014) wrote an intriguing short piece on how solemnity became a norm in the public realm, following the anti-urban tendencies of the nobility and being taken on by the newly formed bourgeoisie. Kusiak argues that the norm of quiet and orderly behaviour in public spaces has been persistent throughout the 20th century, prompting visitors to note how quiet Warsaw is. It is truly a common practice among parents to reprimand kids for being too loud and socialize them into lowering their voice in public. I have witnessed also witnessed a parallel situation in the adult world with bar-goers asking their friend who has had one too many (but certainly did not yell or cause trouble) to keep his voice down, not to attract gazes of other guests. According to Kusiak, it was only the rowdy crowds of the Erasmus students and the football fans during the UEFA Euro 2012 Championship that started to upset the hegemony of silent conduct in the public spaces. Aiming for, even if not always achieving constraint in the public space, whether it relates to sound or relative messiness seems to be one of the characteristics of urban life in Poland.

Discrepant greening

In her research in Rajasthan, Ann Gold (2017, 185) coined the term 'discrepant ecologies', as she noted how green city ethos is rarely coherent, with inhabitants in her field carefully tending to the sacred trees on hillsides surrounding the city, while failing to save the polluted local river. She asserted that regardless of the language used to justify stewardship or neglect, the conservation efforts sometimes stem from enduring notions that people hold dear and even sacred. Even though there are no invocations of the sacred in Warsaw, similar discrepancies can be observed. While greenery and disappearing trees prompt action, air pollution remains a problem that is impossible to address effectively. During my meeting at the Greenery Bureau, the officials stressed the same thing. People do overtly care about trees in their neighbourhood, they do notice if they are ill and contact the authorities if someone is cutting them down. The Bureau officials suggested that such enthusiasm and active stewardship is in fact a public resource.

Literature is often critical of such reliance on citizens' initiative and perceives it as yet another step in building environmental citizenship under neoliberal governance (Brand 2007, Griffiths 2014) and this chapter showed that intimate relationships of people to urban greenery have indeed been used to create a smokescreen in the city. Nevertheless, it must be noted that intense attachments (Ahmed 2004) among the inhabitants, the greenery, and their neighbourhoods have been formed and in most cases cannot be dismissed as a mere neoliberal trickery (Foster 2018). That being said, being protective of the trees can however go hand in hand with not caring about other aspects of the environment and it would be wrong to see it as a paradox. As Gold observed, urban greening can have many faces and include some aspects while completely omit others for a range of reasons. The material presence of trees and greenery in the urban environment seems to have a capacity to grab people's attention and fit into their worlds, as described above. The air, however, remains too abstract, too incoherent as a symbol and too complex to be addressed as a public health issue. The sound of chainsaws or flowerbeds in bloom simply is a stronger representation to answer to.

Green conjunctures

Besides rolling out the green projects, city hall employed several progressive landscape architects, urban farming enthusiasts, and planners, effectively enacting a strategy of coopting as well as containing critical citizen activities. As a result, some of the activities of the city authorities have been quite progressive, including a development of the commoning initiatives, emphasis on public participation and support for low budget parks and community gardening. As such, one could argue that it attests to a certain degree of reactivity in the actions of the city hall, responding to the pressure of the public. The authorities possibly strive to accommodate the multitude that demands environmental action of some kind, as Hanan (2013, 531) wrote in his chapter on Walmart's green rhetoric following Hardt and Negri.

In his work, Hanan shows that solely critiquing Walmart for adopting green stewardship rhetorics would fall short of grasping the full picture of the shifting 'historical conjunctures' at the beginning of the 21st century. He posits that the antagonism of the customers led to some actual changes that go beyond mere rhetoric. Nonetheless, while some changes cannot be denied, many of the steps taken in Warsaw seem to exacerbate the inherent contradictions of the repair approach in the city and remain carefully calibrated to never go far enough to question the status quo or harm the accumulation processes.

An example could be how minor green beautification projects are also often prioritized in the citizen participatory budget surveys, providing the inhabitants with an illusory choice over the public spending (only 0.5 per cent of the Warsaw budget goes towards the project). While some smaller interventions are configured as open to public discussion and suggestions, larger infrastructure investments as well as more demanding projects relating to greenery tough remain out of bounds of real decision-making. In such cases, the proclaimed ability to choose becomes truly meaningless reveals that with minor variations, there is 'no choice at all' at the level that really matters (Massey 2013, 16).

In Autumn 2018 the ruling party in Warsaw got re-elected with a new mayor, but more or less the same platform. The management of visibilities has thus continued in an unchanged manner, despite hiring some of the former vocal critics. One of the most prolific activists-turned municipal politicians was named the head of the sustainable development unit. However, within months of her employment, she would appear visibly tired and irritated by ongoing criticism, as the swift changes that people expected from her failed to materialize. Again and again, people would tag her in their rants on social media and demand action, but despite likely having the best intentions, the weight of her position has not been enough to kickstart faster progress.

As a last note, as discussed in chapter 2, it is important should to mention a different dimension of the untreated air pollution in the city - a slow, but steadily growing pollution economy on an individualized level. Citizens are investing increasing sums of money into special home filters, masks, and even into the newly popular allegedly anti-smog house plants that one can find tagged in every flower shop. The expanding economy of repair that allows for extracting value from natures not only for its use but also for restoration has become a part of the everyday life of the inhabitants. And since shying away from addressing the inherent roots of the crisis only exacerbated the contradictions that gave rise to it in the first place, the filter producers are in luck, with pollution in Warsaw not likely to disappear anytime soon.

Conclusion

> "It was a reaction to the social mood, they realized that something has to be done, so they started. But to a large extent it's just Potemkin activities, pure greenwashing. They know that citizens demand clean air right away, so let's do something so that they would more or less vote

> for us anyway. But I will be brutal. I can't see true determination to solve the issue, it's purely a political calculation. The political costs would be too high if they actually did anything against the drivers... the activities they do do not at all correspond to the scale and urgency of the problem… …and they say they plant the trees, but in reality they keep disappearing. One hand is planting the other is cutting. The same with smog. One hand does something, the other the opposite, e.g. look at the (newly proposed) underground parking lots that in fact increase the pollution and waste heaps of money that could be used for something else." (Maciej, WBS)

The chapter has analyzed this process as a spectacle of repair, an emergent technique of governance that relies on the management of visibility to address environmental degradation. In a city that is both rapidly developing and suffering from crippling pollution, the handling of urban natures inevitably became one of the central battlegrounds of political power with both local and global audiences. By drawing on a combination of available framings set both within the abstract ideology of green cities and the local sense-making mechanisms stemming from the deeply ingrained imaginaries about the city, the authorities have provided a substitute for taking substantial measures to prevent future pollution. Investing work and resources into producing a division between the visible and invisible natures and by extension, visible and invisible pollution and danger thus became the main activity, eventually blurring the boundaries between the actual objective and the process. Due to a lack of a mediating distance between the image and the polluted reality, the spectacle has remained firmly grounded in the material world, turning the city into a lived reflection of the green image - with the trees and flowers signaling order and mitigation activity, keeping the polluted air 'invisible' for most of the time. In a way, the practices of managing the sense-making processes of the inhabitants have thus become almost parallel to the polluting ones. The chapter has further proposed an analysis of a production a 'green' dimension of governing, with the authorities presenting the policies on urban nature as a non-hierarchical whole that one can pick and choose from interchangeably, making up for the poor performance in the air quality statistics without resorting to metrification techniques.

During our conversation about the green infrastructure in the city, a landscape architecture professor Czarnecka summed up the enhanced investment in greenery by noting that 'the costs are low, the social effects are visible and everyone has a (positive) reaction to that'. The city hall simply took the opportunity, as after all, planting flowers and trees is decidedly less challenging than achieving a significant alteration in the everyday functioning of the city and its inhabitants. Most utopian urban interventions throughout the last century could be characterized by their visibility as one of the vital elements of their raison d'etre (Bringhenti 2007). Propping up the whole city as a green capital also possesses an element of such utopian thought. Even though sustainability and green policy making has become an increasingly common branding device used by both public and private organizations (Greenberg 2013, 58), the choices made by the municipal authorities aim beyond simple branding – they signal an aspiration, a desire that however cannot be fulfilled without implementing fundamental

changes. In a way, it is here that one can look for an answer to the question of why a resonance between the concept of repair seems to work in relation to both environmental and material conditions of life. Warsaw is a city where aspirations have been coming true for many who managed to reap the immediate rewards of global capitalism. Pausing to ponder about the price and about the ones that have been left out of the process has not been on the agenda in the recent years. And just like many inhabitants like to put their newly found wealth on display, so does the city. Putting economic growth first and deriving the legitimacy from it has not only enabled the rise of the repair approach, it has made it inevitable.

Circulation of the images can sometimes acquire a quality of collective wishful thinking, but have very real social consequences (Laszczkowski 2011, 78). It is vital to note that the consequences in Warsaw are not only the lovely flowerbeds, cleaner looking streets and experimental new parks, but also all the routes of action that have not been taken in order to curb the pollution. The actions of the authorities indeed have not remained completely uncontested. Commenting on what he saw as diversion tactics of the city hall in relation to systemic problems, a leftist urban activist Marek has been critical of the way the city hall handles the air pollution issue put the phenomena bluntly in relation to a 'petit bourgeois way of thinking': "If it's clean and calm, all is good, regardless of what's happening under the carpet." So were the Warsovians, who praise the greenness of the city conned into seeing their city as green? Marek's comment provides an uneasy answer. The greening of Warsaw is nothing but real. However, as the rules of the spectacle dictate, one visible dimension of urban natures has been used to replace the whole, diverting the attention away from the toxic air that does not fit the desired image. Resisting containment and manageability, the urban air in Warsaw truly often seems to be out of sight. And meanwhile above the carpet, everything is neat and green.

7. Reflections on methodology and being in the field

The dissertation is based on data collected during a year and a half of ethnographic research in Warsaw, supplemented by several shorter returns to the field. The data serving as a basis for the analysis were acquired through approx. 50 semi-structured interviews with a range of stakeholders. In addition to the interviews with inhabitants of Warsaw, I spoke to the environmental and urban activists in several NGOs as well as to the employees of different bureaus under the city hall including the Environmental Protection Department, the urban planning office, and the Greenery Bureau. Besides the interviews, I collected and qualitatively analyzed all available materials pertaining to the phenomena studied such as a Million Trees for Warsaw project, planning documents linked to the past and future of the green ventilation corridors, policy documents dealing with environmental issues, and measures against air pollution. I further analyzed social media posts and interactions, both by following my contacts and individual influencers, but also by regularly checking pages of the NGOs, officials, and politicians. I attended the events, demonstrations, discussions, and conferences that were directly or indirectly linked to the topics of the dissertation, acting as a participant observer or just an observer. Lastly, throughout my time in Warsaw, I was an active member of the gardening community at Jazdow's Motyka and Slonce garden. Jazdow provided me with an ample source of interlocutors and insights, but also was a sort of a sanctuary that always helped me relax.

Shifting targets

> *"What constitutes the field emerges in and through the immediate moments of surprise discovery, when otherwise detached elements come together in discrete assemblages of concepts, persons, things, and sites that seem to chart a relatively coherent configuration through their confluences" (Daalsgaard, Nielsen 2013, 4)*

Entering the field, the plan as well as most of my theoretical preparation was concerned with the issue of urban gaps. Geographically, I chose to focus on Warsaw and the capital area, following Candea's (2007, 167, 174) defense of the bounded field site as a self-imposed methodological limitation. He described the ongoing feeling of incompleteness during his dissertation research as he was trying to follow as many leads as possible and inevitably failing to explore them all. He therefore advocated for a reconceptualization of the field as an 'arbitrary location' that "becomes an explicitly 'partial' and incomplete window onto complexity", as opposed to the holistic ambitions of the multi-sited researchers. Pursuing my interest in Eastern European cities, Warsaw represented a case of a place where political and economic power coalesces. Inevitably partial, the city nevertheless acts as a magnifying glass for many of the processes and contradictions unfolding in the region and beyond. Cities are not only localized material artifacts but sites where new processes reconstituting the social world become enmeshed, where experiments and new political and ideological projects get tried out

(Brenner and Theodore 2002, 28). Furthermore, the territory of Warsaw is clearly administratively delineated and many policies I followed only applied within the capital region. In addition to that, as argued in the dissertation, Warsaw has a unique position within Poland, oftentimes going against the tide of national politics.

However, fieldwork found its own way and it proved inevitable to venture out beyond the city bounds geographically and otherwise; be it to the sprawling suburbs or towards national policies. In this sense, the cityness (Simone 2010) proved to span far beyond the contrived space of the city; studying cities is rather about studying a mode of spatial reproduction producing connections that cannot be escaped. As Lefebvre predicted, the process of urbanization inevitably becomes complete, with a universal reach (Lefebvre 2003, 1). Similarly, what was carefully conceived as a topic for the entire dissertation turned out to be more of a gate towards other phenomena that I encountered in the field. After all, the contours of the field shall be open for discovery, explored and possibly expanded (Marcus 1999, 117). The strongest push to open up my exploration and move beyond the gaps appeared in a form of a new air pollution crisis, a topic that permeates the whole work and that led me to reevaluation of my writing and thinking on gaps. Sometimes, there are chance encounters in the field that one cannot help but follow. Marilyn Strathern (2004, 5) argued that doing fieldwork must remain open-ended, full of detours and surprises, rather "than devising research protocols that will purify the data in advance of analysis, the anthropologist embarks on [an] exercise which yields materials for which analytical protocols are often devised after the fact'. Serendipity in the field is key to most discoveries (Frydenberg et al. 2019). Regardless of the esotericism implied in the term, ethnographers often (unknowingly) employ a kind of intuitive reasoning that goes beyond subjectivity and objectivity. If initially, I prepared myself for the kind of fieldwork research that might loosely be called abductive reasoning, the messy reality on the ground forced me to investigate novel themes and novel explanations, just as they appeared in front of me (Quieoz and Floyd, 2005).

The kind of knowledge one acquires in this manner might be perceived as 'accidental wisdom' (Calhoun 2014), but pure accidents rarely exist. Frydenberg et al. (2019, 1903) argued that in order to ready when the opportunity arrives an anthropologist should be armed with "background knowledge, an inquisitive mind, creative thinking and good timing". Yet clearly, as much as different theorists try to persuade students of anthropology to keep an open mind, only 'good timing' on Frydenberg's list is a matter of pure chance, the rest can be prepared, practiced, and enhanced during the research. And one can often feel overwhelmed by the constant shape-shifting in the field. Worries about spreading the research too thin and anxiety stemming from a 'tyranny' of an array of seemingly equivalently relevant research choices available are both very real issues to deal with (Candea 2007, p.174). Not missing on opportunities comes with the anxiety of entering the unknown. As Hazan (2013, 13) argued, anthropology is an undisciplined discipline; it is not and must not be bound by rules that are set in stone,

instead, each practitioner reinvents the fieldwork anew. In a world where much of our lives are planned and carefully segmented, 'reinventing' fieldwork is both a blessing and a curse.

Undisciplined fieldwork

In my case, willingness to let go of the carefully prepared plans as a crucial prerequisite for good fieldwork manifested itself not only in terms of the scope of topics I wanted to research but also in figuring out how to best go about the research itself. Marcus (1998, 245) wrote about 'sense of anxiety… about the loss of integrity and effectiveness of the ethnographic form and process, governed by their traditional rhetorics and regulative ideas'.

Before embarking on the PhD program, I already had some experience doing ethnographic fieldwork. However, all my previous studies took place in small communities, where I quickly became a familiar face. People would often want to talk to me without being asked to and despite not finding housing literally with the interlocutors, I would stay in the middle of the respective villages, always physically close to whatever action was going on. The imperative to speak the language, live with the people, and shy away from contacting your own thus curiously hovered above me. Fetishism of the fieldwork (Boon 1982, 5), often linked to highly masculine and colonial notions of a pioneering researcher was there: spend at least one year in a community and get to know it intimately well from the inside (Hann 2002, 14), suffer and bring stories to tell back home. A Malinowskian dream of what a proper fieldwork is supposed to look like was engrained in me in ways I did not know about, which became clear after the initial weeks in Warsaw.

What seems relatively easy to do in a tight-knit community can be considerably more challenging in a city of 2 million inhabitants. First of all, it was completely out of the question that people I wished to interview would be able to offer me lodging in their homes. Warsaw is a city with sky-rocketing rent prices and small apartments and the likelihood of finding someone with a spare room from the start was close to zero. Throughout my stay, I was lucky to find apartments in relatively central locations, enabling me to move around the city with ease, being always close to whatever was going on. However, the specificity of living in the central location became clear for example when I tried to meet (and possibly interview) my direct neighbor from the corridor, hoping to learn more about the area and her take on the changes in the city. She revealed rather quickly that she is a widow of a diplomat, having lived in Baghdad in the 1980s and in Jakarta in the 1960s. She told me amazing stories from her travels as well as from living in socialist and transforming Warsaw as a member of the state elite. At the same time, our conversations reminded me of where I was staying, having some stories about the city at hand, while others remained concealed by the specificities of the downtown areas.

The second, possibly a more disconcerting feature about doing fieldwork in a larger city was that even though the vast majority of people that I met along the way were kind and generally willing to do

interviews with me, it would be quite rare to have a chance to get a follow up or to be able to interact with them in other situations. One interview, one shot. Very often there would be strict limits over how long we could talk (typically lunch breaks), ruining my hopes for more in-depth conversations. The topics I was engaging with often had no 'owners' that would spend their days dealing with them only.[87] And even though I eventually found people and community to follow and spend time with, many of the interactions in the field remained event-oriented, with ever changing participants. A one-off discussion here. A protest there. Especially in the initial months, establishing rapport and some kind of intimacy in the field and with the field seemed like an impossible task.

At the same time, social relationships have found their extension in the online realm, with Facebook, Instagram, and partially Twitter all playing crucial roles in the ways people interact with each other, online and offline. Especially with causes that do not necessarily lead to major mobilizations, very much like air pollution or green ventilation corridors, it was on Facebook where opinions were cultivated and battles were fought. The methodological conundrums that following online posting pose were all there. Separating voices of the people that I personally knew from the people, who I knew for a fact existed and commented under their own names, from the people who may or may not be real at all and applying different degrees of approaching their posts in the analysis was one issue. Another one was trying to establish how to approach some of the discussions at all; were they a simple reflection of the conversations elsewhere, their extension, or do they possibly solely exist in the virtual space? Oftentimes, the latter would be the case, forcing me to follow conversations unfolding online and later asking people to comment on what was going on there.

Jennifer Cearns (2018), then a PhD student researching Cuban migrants in Miami wrote a blog describing the feelings of guilt and uncertainty once fieldwork does not succumb to the traditional patterns of what ethnography should be. For her and for me, on several occasions senior anthropologists as well as our peers openly and less openly hinted that our research does not really have the parameters of a 'real' fieldwork that could deliver ethnographic results. Staying in the global North, staying in a city, not living with the people you study, and resorting to the digital media, there are many boxes that are left unchecked. To an extent, every research has to be invented anew and there is usually little sense in sticking to preconceived notions of what constitutes good fieldwork.

Distance, relations, friends – being in and out while in the field

Researchers in the field are caught in never ending renegotiations of striking the fine balance between being too close and too distant from the people they try to include in their studies (Behar 1997). At the

[87] This also manifests in the way I have used the ethnographic data throughout the dissertation. Instead of introducing recurring 'characters', most vignettes and commentaries from the interlocutors are in a form of illustrative stories or episodes. While this was at first an unconscious result of the way my data is structured, I eventually embraced it as a method allowing me to introduce the richness of the field without being constrained by narrow focus on individuals.

same time, spending long periods away from home (whatever it means), it is also challenging to know when and how to be off the clock sometimes. For most of the time I spent in the field, my long-term partner stayed in Warsaw too. There are obvious positives to having someone close near me in a stressful time that fieldwork can be. It was comforting to have someone to return home to, to complain to and alongside with and to have someone to share my insecurities with. On the other hand, their presence posed a puzzle for communicating with the people in the field and exposed to me that my relationships are often carefully calibrated to tread lightly between friendship and informant-researcher roles.

One moment of doubt on how to navigate the research came at a party in a community garden at the Jazdow settlement that I was a member of and where some of my close informants worked. It was a lovely warm evening, we were eating pizza from the oven in the garden, throwing around Frisbee, and drinking beers. As I knew the event would be fun and quite a few people I knew were around, I attended it together with my partner. Later in the night, we stopped by Janek, one of the active community members, when the discussion turned to future democracies. Long story short, my partner got into a friendly, yet increasingly intense discussion with him. As they were both getting slightly passive aggressive, my concerns grew. I thought I was having a perfectly laid-back weekend night, but their debate opened up the curtains on what was becoming crystal clear – at the back of my head, I was always working, and this social event was far from being social only. And even more importantly, Janek, the activist we spoke to, was becoming my friend but was also one of the key people in the field, who helped my research in myriad ways. My discomfort that night was not just about the conversation becoming antagonistic, it also stemmed from worries about the consequences of what might or might not have been a perfectly regular party interaction.

Pertierra (2007, 9) provides an account of how she organized her wedding while staying in the field, getting married to a man from the community that she studied, revealing the division between the 'real life' and 'fieldwork life' that she was not aware of before. "Gone were my crutches of cultural relativism and of difficult experiences being more grist for the thesis mill; it was *my* wedding and I had to be *in* it, there was no safe ground of distanced observation to be had." An event as intimate as one's own wedding (and unsatisfactory party aesthetics there) had to take place to show to her how much in her life she was letting go, disengaging from seeing herself as a true participant and from passing value judgements. For me, the night at the Jazdow revealed a similar sentiment. I always took pride in talking with the informants in an upfront manner. Disagreeing or interrupting them sometimes; simply putting my cards on the table and not hiding my beliefs or agenda. I am aware that this approach is not viable in all types of studies, however, the topics I followed allowed for some antagonism without closing my field or gravely offending the people I talked to. However, the simple truth that all ethnographers must eventually come to face is that attempting to build 'real' relationships in the field also can be

accompanied by antagonism. Building emotional connections comes with a cost and 'real' also means inevitably disliking something or even someone and getting into more or less serious fights.

Looking back, I realized that eventually I started isolating at least some of the people I got to know in the field from my research, not asking them to explain things to me and certainly not asking them for interviews. As if I was creating a private space for myself and them, detached from work and detached from suspicions about what the actual nature of our relationship was. With others that I nevertheless consider not only interlocutors but friends, I did not establish such a barrier. With some, I never even tried to be close. I cannot come up with a persuasive reason why it is so. Behar (1997) has called this a vulnerability of the anthropologist as an observer. But being vulnerable for a year or two in the field can be exhausting. One shall be able to forge empathetic links with the people in the field, inevitably opening up for a possible emotional battlefield. On the other hand, writing well often means being able to evaluate the data from a critical distance; sometimes a literal, geographical one. How to go about such distancing if there are close connections in place is a thin line that all ethnographers have to walk. Fieldwork is a messy business and until now I still wonder if I navigated it right, if one can ever be.

8. Conclusion: In the tired city

Zielony Żoliborz[88], pieprzony Żoliborz
Rozkwita na drzewach, na krzewach
Ściekami z rzeki kompletnie pijany
Chcę krzyczeć, chcę ryczeć, chcę śpiewać
Gdy patrzę w twe oczy,
zmęczone jak moje
To kocham to miasto,
zmęczone jak ja
Gdzie Hitler i Stalin zrobili, co swoje
Gdzie wiosna spaliną oddycha

(EN)
Green Zoliborz, damn Zoliborz,
Blossoms on the trees, on the bushes,
Completely drunk on the sewage in the river
I want to shout, I want to yell, I want to sing
When I look into your eyes,
tired as mine
I love that city,
tired as I am
Where Hitler and Stalin did their part
Where spring breathes exhausts

Excerpt from a song Warszawa by T.Love, lyrics by Zygmunt Staszczyk (translation by author)

[88] One of the central neighbourhoods in Warsaw.

Everyone in Poland would instantly recognize the iconic song from 1991. A bitter love letter to Warsaw and its fast-paced city life, it is also a poignant description of the environmental issues of the time. Sewage running in the river and exhausts in the air are juxtaposed to the springtime bloom in one of the popular neighbourhoods. It is indicative of the carnivalesque early days of post-socialist transformation in the country, with the environmental concerns as one of the central issues that fuelled discontent with the ailing communist regime. However, the environmental zeal in Poland got swiftly replaced with an emphasis on growth, facilitated by free markets. The propensity for green politics, so common among the activists at the time became rare and lost influence in the higher circles of power.

Fast forwarding to contemporary Warsaw, the song feels like a trace, like a spectre that is uncannily familiar. Just like in the song, dirty air has once again become one of the characteristics of the city; yet few would treat it so matter-of-factly as the author of the lyrics does anymore. This time around, the smog fit revealed uncomfortable cracks in the cultivated image of a successful global city that saw itself as anything but 'tired'. The intensity with which the ecologies around us become visible or hidden varies in time and place and has immense consequences. The air pollution surfaced and became a matter of general concern during a seemingly accidental weather occurrence. But in fact, the revelation was far from haphazard; the smog fit was rather a small nudge, shining a light on the bundle of processes that stood in the background all along. And so within months of the major smog episode in 2016-2017, it became virtually impossible to merely stand by without joining the conversation in one way or another.

At one point, a mega-billboard paid for by an insurance company appeared in the city, announcing that 'this billboard is not an ad' and in smaller print 'it is an air filter, absorbing pollution caused by 91 350 cars a year'. Magritte's Treachery of Images with a famous proclamation 'Ceci n'est pas une pipe' immediately springs to mind, but the billboard seemed to be dead-serious about its own message, far from the playfulness the Magritte association might suggest. The press release of the company claimed that the billboard-filter used an innovative technology absorbing the pollution particles from the air, contributing to anti-pollution efforts around the country. The image of an (allegedly) smog-filtering billboard[89] paid for by a large corporation near one of the busiest areas in the city speaks volumes about how air pollution became materialized also through intertwining with ever-new dimensions of urban life; air pollution as a business strategy, air pollution as a political tool. When something that feels so natural, effortless, but at the same time inescapable like breathing the air turns into risk, it becomes hard to ignore.

But it also speaks volumes about the variety of ways in which the urban ecologies have been approached in the novel circumstances. The location of the billboard was not without some unintended irony. The

[89] Claiming that the billboard is not an ad might also be a wink to the municipal authorities, who at the time were in the process of passing a landscape resolution banning any large-scale billboards from the city as a part of the fight against 'visual mess' in the city.

busy streets it overlooked have been suffering from constant traffic congestion, one of the prime sources of air pollution in the city. Yet the aim certainly was not to shame the drivers passing by the ad; on the contrary, the billboard provided an appeasing illusion of a fix, alleviating the fumes and the dust from the road by simply installing a large piece of a high-tech cloth. The company signalled concern as well as a dynamic solution-seeking, allowing the customers-to-be to feel a bit safer moving around in the dirty Warsaw air.

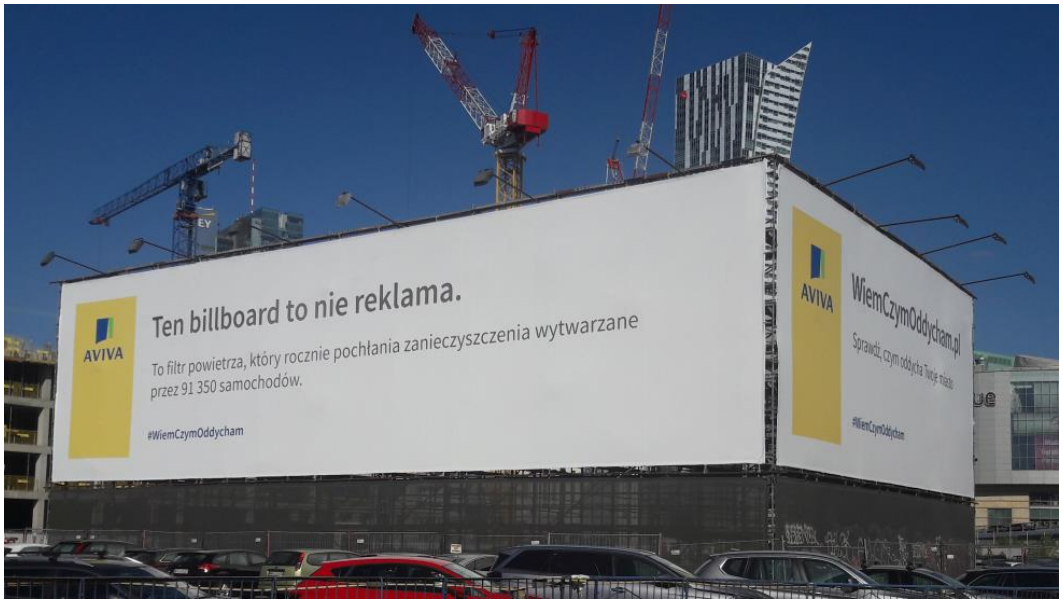


Figure 25. 'This billboard is not an ad' (NM 2018)

The company saw air pollution as a gateway to higher profits and proposed a fix that assumes no systemic changes at all; one that avoids asking Warsaw and Warsawians the hard questions. For many actors in this dissertation, this has been the go-to approach. The spectacle of repair signalling mitigation of the polluted city has been adopted beyond the sphere of urban policy making. The repair led to reinventing the language used in the public discourse, but even more importantly, impacting the material urban space. Through the billboards and trees; through new path dependencies that will accompany Warsaw into the future.

However, the cases covered have shown that simple repairs will not do and the mobilisations relating to urban ecologies cannot be undone either. One of the main reasons why air pollution became such a potent symbol in urban politics is that the inhabitants intuitively understood the intricate network of connections surrounding the issue; understood that this crisis has not been about smog alone. Instead, the re-centered dark red air quality maps of Warsaw put the chosen mode of development in the city on trial, similarly to the way it was thirty years ago when the song was written. Partially by coincidence, the toxic particles in the air showed that the interconnectedness of the urban ecologies with the lives of all the inhabitants. Even though this dissertation made a point in arguing that there is no such thing as fair pollution that affects everyone equally, it is also true that nobody remains unaffected. The rich

Warsaw cannot simply buy or trick its way out of 'breathing exhausts'; not without an overhaul that will have to go far beyond installing filter billboards.

Plus ça change

One of the publications on the city that I have cited in this dissertation is called Chasing Warsaw, suggesting that the city is in constant flux, reinventing and transforming itself. According to the authors, it is turning into a different city before researchers even manage to find appropriate language to describe it (Grubauer, Kusiak 2012, 9). To a certain extent, focusing on a perpetual change is just stating the obvious truism for everything in this world, yet the narrative about the vibrant pulse of Warsaw has been deeply ingrained in the imaginaries of the inhabitants and researchers alike. And indeed, a lot has changed, for the four or five years that I have been closely observing the city, living there, leaving and returning, it has been in a frantic development process. Empty spaces have appeared and disappeared with new demolitions and constructions taking place all the time. There are cranes constantly lining the skyline, transforming the neighbourhoods and the views of the horizon forever. There are hotspots for the local youth slowly growing ordinary, new bars opening and closing and new urban projects coming and going.

The tension between the timeliness of the findings and the slowness inherent in most ethnographic research has belonged to the prime challenges for the discipline (Dalsgaard Nielsen 2013, 3). However, looking at the dissertation, it seems that its 5 year-long 'ethnographic present' in Warsaw has been almost worryingly cohesive. It is a fact that there are growing citizen and non-state mobilisations and that urban contentions have been on the rise. And yet, the processes and relations that really seem to matter in the story of this dissertation appear to be in a peculiar stasis. The number of harmful household heating boilers did not significantly decrease and in some cases even went up, as the surveying for the statistics improved its efficiency. The air pollution levels remain more or less the same.[90] When writing these words in January 2021, Poland is once again suffering from severe smog conditions. The media and the activists publish analyses and calls lamenting that in four years since the 2017 emergence of the topic, too little has changed. While there are definitely more bike lanes now, new roads are still being built and some old ones widened, channeling more and more traffic into the city and encouraging suburbanization. The urban planning documents have not been completed. People are still losing their homes due to the ongoing restitution process. One of the terms that consistently appear in people's evaluations of the new urban policies remains to be 'sciema' a Polish term for smokescreen activities, for Potemkin-like measures. And possibly most importantly, many people I know have been growing increasingly disillusioned about the city, some contemplating leaving the city and some leaving already. Just like in the song, the city is tired and so are the inhabitants. That is the case of one of the key people

I met and a central figure in the activist circles, who moved out of Warsaw giving up on urban politics, trying to look for alternatives in the mountainous South of the country instead.

That being said, when looking sideways, there has been a major shift that ranges beyond the scope of the dissertation; one that pertains to the climate change. Throughout fieldwork, my interlocutors oftentimes discussed how climate change seemed to be completely out of the spotlight in Poland. Inspired by this finding, I even wrote a text about how people acknowledge the phenomenon but seem to completely ignore it as a valid point of concern[91]. Peculiarly so, since both climate change and air pollution are atmospheric phenomena and the struggles could be neatly conjoined, providing new synergies for the contentions. Some international NGOs even actively altered their communication strategy to avoid emphasizing climate issues in Poland - the most obvious example would be the Catholic Climate Movement that decided to translate its name in Polish as Catholics for Environment instead. An activist group jokingly responded to the lack of will to act in the country in a viral video featuring several fake experts that use scientific language before presenting the Polish climate change stance as "whatever the f**k'. Not even the COP24 climate conference organized in Katowice in late 2018[92] and the extensive press coverage seemed to have much impact on local policymakers or activists. Weather extremes continued being reported as curiosities and any fight against coal dependence in Poland would typically be framed in economic or air-pollution/health terms.

One of the theses that I tried to highlight in this dissertation was that engaging with environmental issues opens up possibilities to jump scales and jump topics. Air pollution certainly allowed for it, highlighting social inequalities, issues linked to energy and transportation policy and generally providing leeway for reassessing the mode of economic and social development in Warsaw and Poland as such. However, contention associated with air pollution has also been directed inwardly; the world beyond Poland usually serving as little more than a comparative example to highlight the scale of the local issue. As I examined in the second chapter of this dissertation, the European and global charts became crucial in informing about pollution, underlying the perception that Warsaw is out of sync with other (Western) global cities it aspires to join. The air pollution problem, despite being deeply embedded in larger geopolitical and capitalist processes, remains mostly framed as a singular issue that Poland and Warsaw have to deal with on their own. In addition to that, some of the proposed solutions like for example wider adoption of gas disregard carbon emissions, keeping locals' eyes fixed on the pollution alleviation only.

[91] Some interviewees, including ones from environmental organizations even suggested that Poland might be 'better off' with the changes and warmer climate.

[92] Poland, as a host country of the climate conference attempted to showcase a 'different' approach to climate change and heavily advocated for the use of forestry in order to reach climatic goals. At one point, there was even a small concert by the traditional group of foresters, playing horns and harmonica. Despite experts' scepticism about the feasibility of the plan, the Polish president proclaimed that the country has no plans to quit using its remaining coal supplies. Similarly, the exhibit of Katowice heavily relied on coal imagery, featuring jewellery or soaps made of coal and quickly becoming one of the most (ironically) photographed places at the conference.

However, despite appearances, things started changing. I first realized that the piece I wrote might be finally obsolete during my last return to the field in the winter of 2019/2020. One of my interlocutors, Tomasz, organized a workshop on imagining utopian futures amid the climate crisis that I promised to participate in. A few days after signing up for the event, I found out there was an air pollution citizen science workshop taking place on the opening night of the utopian futures project. Since air pollution was my primary topic and I was eager to use my last weeks in Warsaw to gather some extra insights, I called Tomasz to cancel and excuse myself from the event. From his voice, I immediately understood that he was slightly upset with me. Initially, I thought this could be the case because I promised to pay the workshop fee earlier, but then he pronounced what was on his mind. 'Well, you know, I just don't think that at this point, air pollution is that important,' and he went on, trying to persuade me against dropping out, remarking that pollution in Warsaw simply is only a partial topic, possibly taking our minds off what really matters and what needs to be addressed more urgently, namely the climate crisis.

In the summer of 2020, the country was hit by unprecedented drought and the Vistula river in Warsaw nearly dried out. At the same time, a catastrophic fire erupted in one of the national parks, ironically enough, a wetland. And amid the series of disastrous images that suddenly did not come only from distant places, the Extinction Rebellion protests started gaining momentum in major cities. If before, my interlocutors often speculated that climate change remains below radar due to vagueness and overt abstraction of the topic, now, climate change arrived forcefully knocking on the door.

In Rudiak-Gould's study (2014), Marshall Islands inhabitants accept the blame for climate change as a way to move beyond colonizing narratives and empower their own identity claims, despite being prime victims of rising sea levels. In Poland, emancipation seemed closer within reach through first reinserting the country back in its imagined place by actively fixing the air pollution levels. The tangible, the crisis before the seemingly distant future crisis. However, now it seems that the embrace of climate concerns overhauled this and widened the frame of responsibility. Poland and its coal problem, to name just one among many, thus gained a significantly more far-reaching dimension, surpassing the sole focus on air pollution. In this manner, climate change ushered in a repositioning of one's place in the global realm, embracing the interconnectedness and centering Poland and Warsaw among the prime carbon emitters.

And just as importantly, it brought along a degree of reevaluation of how one relates to the natural processes. Yes, a lack of water in the Vistula river in the summertime was a dramatic wake up call for many. But it was also a moment of reconnection of the river with the people on a level that goes beyond the usual concerns for the environment, further facilitating an underlying shift from nature as being out there, to nature as a global process, as a political actor even. To paraphrase Latour, joining the climate struggles is not about 'defending nature' anymore, it is the nature defending itself, it is the reestablishment of a vision of a truly shared world (Latour 2019, 64). I disagree with Tomasz's assertion that air pollution is not that important. But I absolutely understand his concerns with the larger picture of the future in the changing world. As this dissertation showed, the perpetual state of becoming, as a

characteristic of the ecologies that we are part of, has always revealed the old rifts and created new ones. And as the air and the land continue shifting in the never-ending rhythm, the climate dances along.

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