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Science, citizens, and air pollution: Constructing environmental (in)justice

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Introduction

In their efforts to put air pollution on the public agenda, citizens cannot avoid engaging with science. Being a largely invisible socio-natural artifact, air has to be translated into a subject of contestation and debate for it to become politically salient. Which choices do citizen movements make during this process and what effect do these choices have on particular constructions of environmental (in)justice?

To formulate an answer to these questions, I engaged in a study on the politicization of air pollution in two major cities: Antwerp (Belgium) and London (UK). After decades of relative silence, air pollution figures high on the public agenda in these cities. This increase in awareness, contestation, and debate is not only reflected by the number of newspaper articles dealing with the topic (Kenis 2017), but also by the rise of citizen movements trying to tackle it. Importantly, these movements do not only struggle to get the topic on the agenda, but also engage in a debate on the terms in which the problem has to be understood and, consequently, what has to be done about it. Crucial is *how* the topic is framed and which discursive strategies are used to this aim.

In this chapter, I analyze the increasing attention paid to urban air pollution and investigate the discursive strategies used by citizen movements in this con-

text. The main focus is on the way in which particular spatial interpretations, related to the focus on particular pollutants rather than others, lead to diverging claims about environmental (in)justice and to the advocacy of different types of action. The cities of Antwerp and London not only exhibit a number of similarities in this regard, but are also significantly different in terms of the way air is mobilized and made into a central topic of contestation and debate.

Being a largely invisible socio-natural artifact, putting air on the public agenda requires a complex exercise of translation. The air we inhale appears, commonsensically, to be "just air." Its composition, the pollutants that it contains, and its effect on human health remain largely invisible. As a result, not only the "embodiedness" and "embeddedness" of human beings (Mellor 1997), but also the "unequal power relations [which] are 'inscribed' in the air" can easily remain unheeded (Bryant 1998, 89). As a consequence, the politicization of air requires particular discursive manoeuvres.[1] To an (even) greater extent than other socio-ecological predicaments, the framing of air pollution as "a problem" requires (citizen) scientists who measure, model, and/or monitor it, and a whole range of actors who translate these scientific artifacts into politically salient issues. This translation exercise, and its interdependent relationship with science, makes the politicization of air both difficult and interesting. Crucially, it entails a process of discourse construction, whereby specific elements are included and excluded and particular discursive frameworks are used.

This chapter focuses on this translation exercise and studies the decisions, choices, and exclusions that take place during this process. It analyzes the discursive formations through which this increasingly salient issue is put on the political agenda. It argues that the framing of a political problem starts at the level of the construction of a scientific fact. This construction entails making choices about what to include and exclude. Choices that seem neutral at first sight, such as the location of measurement devices or monitoring stations, the chosen time frame, or the pollutant focused on, all affect the scientific observations made, and thereby the way the problem is (or is not) politicized and appears in the public domain. These scientific choices do not happen in a political vacuum. Which of the multitude of potential scientific observations gets seen or selected is influenced by a broader "political" interest or stake (Goeminne 2012).

It has to be noted that the notion of the political should be interpreted here in the broad meaning of the term. By "political" I do not refer to political institutions like parliament or elections, but to a logic of thinking and acting in which the constitutive character of power, plurality, conflict, and decision is recognized (Mouffe 2006; see also Kenis and Lievens 2014). It is in this sense that science is always intrinsically political, even if not all science is political in the same way (Lievens and Kenis 2018).

Staging air as a politically salient issue starts with the construction of a scientific "fact," but it does not stop there. A whole range of actors (citizens, medics, journalists, policy makers) then take up the issue (or do not), and participate in its further creation. Take for instance the problem of NO_2 (nitrogen dioxide) pollution related to diesel exhaust. Though this has only recently figured centrally on the public agenda, the problem has been known about in scientific circles for decades. The first newspaper articles on the issue were published as early as the 1970s. However, it is only recently that the problem started to engage the public and create a prominent debate. Such examples show that staging air pollution as an important political theme not only depends upon the construction of scientific facts, but also on whether this scientific fact is taken up and framed in a way that allows it to gain center stage. Finally, tension can arise between different ways of framing the problem and different ways of actually tackling it.

In what follows, I will first delve in more detail into what I will refer to as the three steps of translation, after which I will present two case studies: first, the city of Antwerp (Belgium) and, second, the city of London (UK). The focus will be on how the representation of air pollution as a spatially unevenly distributed phenomenon contributes to its (de)politicization. Therefore, I will focus on the spatial imaginaries underpinning processes of (de)politicization. In order to make empirical sense of these processes, I engaged in a document analysis of the air pollution debate during the last decade, did interviews with key actors, and participated in numerous lectures, workshops, and debates.[2] In total I spoke with more than 30 key actors (civil movement representatives, policy makers, scientists, entrepreneurs). This triangulation of data allowed me to take a broad view of the topic and to acquire an in-depth understanding of how discourses are articulated and constructed (Baxter and Eyles 1997; Esterberg 2002).

Visualizing air pollution

Spatializing "us" and "them"

As Chantal Mouffe (2002, 2006) famously argues, us–them distinctions are crucial for politics: conflict engenders political passions, mobilizes people, and gets them involved. Collective identification is crucial here: individuals have to transform themselves into a collective actor, a common interest has to be identified, a shared identity has to be constructed. In this process of construction, both conscious and unconscious choices are made, and a continuous negotiation between in- and exclusions takes place. A discourse is not static, not fixed for-

ever, but always in motion. Different elements come together, are interwoven, and start to shape the narrative that symbolizes the movement (Howarth 2000; Howarth et al. 2000). This narrative is never entirely coherent (Gramsci 1971). It inevitably contains tensions, fissures, distortions. Significantly, it establishes boundaries around an "us," in relation to a "them." Every attempt to form a collective identity, to bring people together behind a common goal, requires the implicit or explicit definition of a "them," an opponent: someone or something that is opposed (Mouffe 2006).

With an intangible object such as air quality, citizen movements are confronted with an extra challenge: How to build an "us" and "them" around something that is as invisible as air (Loopmans et al. 2017)? How to represent the interests involved, the actors at play, the political fault lines at stake? In other words, how to make the invisible visible, and turn it into a topic of contestation and debate?

In this contribution, I argue that that putting air pollution on the public agenda requires a specific kind of discourse construction whereby the pollutants in the air are not only made visible, but made visible in a particular way. More specifically, it is my contention that in order to politicize air pollution, social differentiation – as in who is more or less exposed – has to be revealed, and I argue that the most straightforward way to do that is by representing air pollution in a spatially differentiated way. Indeed, there are good reasons to assume that space is the single most visible factor determining who is more or less exposed to air pollution, even if space is, in its turn, often a function of other factors like class, gender, or race. By pointing to spatial differentiations, potential injustices can be brought to the fore. This can then trigger indignation and other political passions. Furthermore, pointing to spatial differentiations can stimulate processes of collective identification. This creation of an "us" and "them," the exposure of underlying conflict, is crucial in every process of politicization.

Put differently, articulating spatial patterns can help to make a largely invisible socio-ecological artefact like air pollution into a distinctive issue: "we are *not* all in this together." Indeed, as Erik Swyngedouw (2007, 2010) famously argues, the framing of contemporary social-ecological issues into an "all together" discourse is precisely what makes them so liable for depoliticization. As he argues, the construction of the struggle against climate change in terms of "all together against CO_2" is exactly what circumvents conflict amongst "the people" and thereby the mobilization of a privileged subject of change. Pointing to spatial differentiations, and thus injustices, in the distribution of air goes against this logic, and allows the emergence of specific actors of change. Perhaps, more than any other approach to air pollution, focusing on spatial characteristics

brings differentiations to the fore and makes them visible. In other words, the imagination or representation of air pollution as a spatially differentiated issue is key to processes of (de)politicization.

Importantly, however, there is *not just one way* of spatializing, and thus politicizing, air. As Mustafa Dikeç (2012, 670) argues: "space is a mode of political thinking, and different spatial imaginaries inform different understandings of politics." Furthermore, not "all spatial metaphors are good or unproblematic" (Dikeç 2012, 670). As he contends: "[c]ertain spatial metaphors may … fail to account for the complexity and multiplicity of the world, and limit, rather than expand, political imagination."

From another perspective, Gordon Walker (2011, 40) argues that it is important to "explore how different spatialities are being tied in congruent and supportive ways to produce … resilient multidimensional justice discourses." In other words, there is *not one just way* to politicize air. The question is therefore not only which spatial representations citizen movements mobilize and whether they support, rather than undermine, just imaginaries, but also which view on justice they defend this way. As Mouffe (2006) argues, a democratic society is a society that shares a common symbolic framework centered around key principles such as equality and freedom, though at the same time allows for conflict about the specific meaning these terms can get. Consequently, democracy is about letting different interpretations of justice come to the fore and engage in discussion, struggle, and dialogue. Therefore, there can be no conclusive answer to the question of what a just spatial imaginary entails.

The construction of a fact, the framing of a problem

Visualizing air in spatial terms is only possible with the help of science. Indeed, for air pollution to be made visible we need (citizen) scientists who measure, monitor, and/or model it. At the same time, this first step in the process of discourse construction does not happen in a political vacuum. It only happens if air pollution is already seen as a matter of concern. (Citizen) scientists' attention will only be drawn to air pollution if there are reasons to assume "something can be found in the air." In what follows, I will discuss in more detail the three levels of discourse construction delineated above as: (1) The construction of a scientific "fact," (2) the framing of a political "problem," and (3) the establishment of political agonisms and fault lines around diverging responses to the problem. Importantly, I make this distinction only for analytical reasons. As a matter of fact is necessarily always a matter of concern (Latour 2004), these three cannot be viewed as consecutive steps in a sequence; rather they should be understood as interactive elements in an iterative process.

The first "step" in the translation of air pollution into a politically relevant issue relates to the choices made by scientists or other actors involved in measuring, monitoring, and modeling air pollution. During this first stage, forms of in- and exclusion are already at play (Demeritt 2001; Wynne 2010; Goeminne 2012). Even the spatial location of monitoring stations has an effect on how we understand air quality and its distribution (Buzzelli 2008). Political maneuvers and struggles about whether and how to monitor air pollution in the UK show that this is far from a neutral issue (Leake 2014). But also, the decision to focus on particular pollutants, to adopt a particular timing or time frame (hourly, daily, yearly measurements), to use a particular type of monitoring device, or to choose measuring or modeling all affect the way air pollution is constructed as a scientific "fact."[3] Different choices on all these levels lead to different "realities." As Gordon Walker (2012, 107) observes: "The choices that are made in putting together and carrying out a study inevitably shape the scope and form of the evidence claims that can be made and the knowledge that is generated – and, it follows, what knowledge is *not* generated." Importantly, a map is always a representation of a particular moment and construction of reality, but this is seldom fully recognized. To paraphrase the words of the famous surrealist artist René Magritte: "*ceci n'est pas la pollution*." While this is generally acknowledged with regard to air pollution maps based on modeling, it is also true for maps based solely on measuring methodologies, such as the maps made from a mass of single measurements often produced by citizen science projects.[4] In this sense, the recurrent call for more monitoring stations, to enable us to arrive at more accurate maps, should be nuanced. The resulting maps also inevitably depend on the choices that are made at the measuring stage: the exact location of the measuring devices, the focus on particular pollutants, the subdivision of particular pollution levels into categories, or the precision of the devices used. The point is not to start a discussion about what is most accurate – modeling on the basis of professional monitoring stations or measuring on a much larger scale with less precise devices, as often used in citizen science projects – but to acknowledge that scientific facts, like those that appear on air pollution maps, are always and by definition, at least to a certain extent, constructions and should be interpreted as such.

That it is not easy to find a good balance between searching for "the truth" (and making political claims on that basis) and recognizing the intrinsically constructed nature of every scientific "fact" was shown in the CurieuzeNeuzen citizen science project in Antwerp in 2017. This project contested existing maps of air pollution by showing that these maps, which were based on modeling, had significantly underestimated the pollution in particular streets (Brussel and Huyse 2017). For instance, the models did not account for street canyon effects

– the phenomenon whereby pollution gets "trapped" in streets with high buildings on both sides of the road – thereby increasing the pollution levels in these streets. Similarly, a number of citizen science projects in London, such as those carried out by London Sustainability Exchange and Mapping for Change, pointed to pollution hotspots in the city which had not been fully recognized as such before and demanded action to be taken straightaway. A number of scientists, in turn, expressed concerns that the measuring devices used by these citizen science projects were not accurate enough and therefore not only their findings but also their policy suggestions should be viewed in that light. They questioned whether a multitude of single measurements – produced by cheaply manufactured measurement devices – would by definition be better than models based on a more limited number of professional monitoring stations. Interestingly, while citizens plead for more financial resources for measuring and monitoring, a number of scientists question this need, arguing that we might not win much with extra investments on this terrain.

While the process of discourse construction starts with the construction of a scientific fact, it does not stop there. As Olga Kuchinskaya (2014, 2) argues: "Our experience of imperceptible hazards is always necessarily mediated by measuring equipment, maps, and other ways to visualise it, but also with narratives." Indeed, the second step is the translation of these "scientific facts" into specific narratives or discourses which frame "the problem" of air pollution. (Citizen) scientists can play a role on this level, for instance in the way they represent the issue in their communication to the scientific community, policy makers, or the broader public. But the choices and decisions made by citizen groups, politicians, policy makers, or business representatives in their efforts to put air quality on (or off) the public agenda are at least as important. From observing particular levels of "air pollution" to a "public health emergency," from "high" to "illegal levels" of air pollution, from the number of "deaths" to the number of "costs, from 'people's health' to "children's health," from "the loss of 1 year of life expectancy/person" to "40,000 premature deaths a year": whether concerns about air pollution are framed in terms of health problems, health inequality, real estate prices, or the potential for further city development – the chosen angle makes a huge difference. This observation is ambivalent: on the one hand, we need to underline that the adoption of a particular way of framing an issue is an inevitable aspect of every form of science communication, while on the other hand, it can appear that all framings distort "the truth" equally. Take the last example, the framing of mortality. The European Environmental Agency (EEA 2016) focuses in its communication on the loss of 8 months of life expectancy for every European citizen. Evidently, this is a scientific arti-fact. In reality, some people lose 20 years of their lives, while others are not affected

at all. Importantly, these deviations in translation should not be understood as mere wrongs which have to be addressed, as if it was possible to achieve a flawless translation. Every choice in constructing a discourse inevitably produces blind spots and forms of exclusion (Howarth 2000; Howarth et al. 2000). It is not the exclusions or the blind spots as such that are the problem, as these are unavoidable, but the fact that the political processes at stake are often rendered invisible. Paradoxically, when air is visualized, the act of doing so often remains hidden. The crucial question is *which* choices are made and what the effects are. Indeed, observing that exclusions are inevitable should not lead us to suppose that all choices are therefore equal, or that the processes of making these choices are of no significance.

In a third step, political antagonisms and fault lines emerge around diverging responses to what was framed as "the problem." Specific political agendas and priorities are put forward, actions are proposed, culprits are pointed at. Crucial questions are: which measures are proposed, by whom, on what basis? How do these proposals relate to the way the issue is framed? How are they justified by making reference to particular scientific claims? What is the analysis of the root causes of the problem, and which visions on alternatives and strategies for change are put forward as a result? Proposals like electric cars, road charging, and pedestrianization are each based on entirely different analyses of the root causes of air pollution and divergent visions on strategies toward change. In turn, these more openly political divergences also inform other choices to be made: the ways in which the issue is framed and the particular scientific observations which are emphasized. As already stated, the three levels cannot be entirely separated, as they are intrinsically interwoven. Choices made at one level inevitably influence those made at other levels in an iterative, interactive process. As the next section of this chapter will show, even seemingly neutral choices like the focus on a particular pollutant (PM or NO_2) can lead to different policies or measures being advocated. Or is it rather that a preference for specific policy measures leads to a focus on other pollutants?

The case of the city of Antwerp: PM is bad

Air pollution has acquired a central place on the public agenda in Antwerp during the last decade (Loopmans 2014; Loopmans et al. 2017). The trigger was the plan to extend the Antwerp ring road, which is actually not a complete ring road as it crosses the city. Moreover, it is only three-quarters of a ring, which is considered one of the reasons why the city is confronted with huge traffic jams. In May 2000, the Flemish government decided therefore to

expand the Antwerp ring road by developing a third crossing over the river Scheldt: the so-called Oosterweel connection. A newly established public corporation, the BAM (Beheersmaatschappij Antwerpen Mobiel), of which the Flemish government is the single main shareholder, was made responsible for the development of the project. In February 2005, when the plans were made public, it became clear that this new connection would be constructed close to a major urban redevelopment area, the "Islet" (*het eilandje*), including a huge bridge (*De Lange Wapper*) over this area, followed by a tunnel under the river Scheldt.

Calling for alternative locations for road infrastructure and/or alternative forms of mobility, citizen movements actively contested the plans. Popularizing scientific knowledge and disseminating it among the wider public has been a main strategy in this endeavor. Through awareness-raising campaigns the movements succeeded in creating a well-informed citizenry and raising the level of debate considerably. In a short space of time, the planned Oosterweel connection became a well-known and key political issue, actively involving not only tens of thousands of citizens, but also important businesses and political parties in a contentious debate about mobility, urban development, and health. While the movements contesting the project objected in the first instance to the construction of "a new highway through the city," after a while, they widened their aims, advocating other visions of mobility and city development, green space, and, importantly, air pollution. Indeed, one of the most important merits of this citizen mobilization is that it has put air pollution high on the political agenda, not only on a local, but also on a regional and national level. Interestingly, the plans to build new road infrastructure stimulated several actors to also question already existing sources of air pollution. Politicians, policy makers, and entrepreneurs were forced to recognize and respect the crucial role played by citizen movements like stRatenGeneraal and Ademloos in this regard. As a policy maker stated in an interview: "Actually, according to us, as an agency, the trigger has been Ademloos and stRageneraal who have made Antwerp aware of air quality and health. We were already conscious of the problem, but the public apparently not. Now, in Antwerp, they are.'

Alongside other groups, the citizen movement Ademloos ("Breathless") made air pollution a topic of general public knowledge and debate by organizing a public referendum and actively campaigning in the run-up to the vote. Under the slogan "Particulate matter is bad" ("Fijn stof is slecht") the movement organized hundreds of citizens who went from door to door to inform people about the effect the Oosterweel connection would have on their health and to collect signatures for the referendum. The key argument was that the proposed building of the Oosterweel connection would drastically increase the particulate

matter (PM) levels in Antwerp and would thereby contribute to further worsening the air-related health situation faced by the Antwerp citizenry.

In these campaigns, reference was made to the finding that the average European citizen loses 8,1 months of her life due to long-term exposure to PM2,5, while this would be 13,2 months for the average Belgian citizen and more than 3 years for the average Antwerp citizen, a situation which was considered by the movement as socially unjust (Amann et al. 2005; EEA 2013). In other words, Ademloos politicized air pollution by framing air pollution as a geographically differentiated health risk. Whereas the European framing of 467,000 premature deaths per year or the loss of 8,1 months of life expectancy for every European citizen (EEA 2016) homogenizes the effects within the population, and thus conceals actually existing spatial differentiations, citizen movements in Antwerp succeeded in pointing to these differentiations and thereby mobilized a significant part of the citizenry around a call for environmental justice. Or, to put it in political terms, whereas the European Environmental Agency (EEA) has framed the problem in a way that risks leading to a situation in which no group feels particularly addressed or affected (and, therefore, motivated to take action), citizen movements in Antwerp have politicized the issue by pointing to spatial differentiations between different cities and between cities and the countryside. These spatial differentiations are triggers of indignation, and of contestation, conflict, struggle, and debate, and this helped to move the topic to the top of the public agenda.

However, while slogans like "Living in Antwerp is unhealthy" ("Leven in Antwerpen is ongezond!") increased awareness of the spatial specificity of Antwerp in contrast to other places, internal differentiations (differences "within" the city) remained hidden, or at least underemphasized. While the movements' communication focused to a certain extent on the idea that people living near the ring road (or near other major roads) are especially exposed to air pollution,[5] this idea did not constitute the nodal point of the movements' discourse (Howarth 2000; Howarth et al. 2000). The main narrative is that of all Antwerp citizens together, united against the ring road, an us–them distinction that differentiates between residents of Antwerp and people living elsewhere, and unifies Antwerp's citizens as a common agent against the BAM. There are evidently good reasons to opt for such a discourse and the related fault lines, but critical reflections should also be made. In the context of this chapter, it is especially important to notice that knowledge about the spatiality of air pollution is used in a selective way. Particular injustices are emphasized while others come less to the fore. The reasons for doing so are obviously strategic, even if this is not always done in an explicit or conscious way: pointing to the Antwerp citizenry as a comment agent, an "us" which is constructed against a common

"them," helps to mobilize as large a group as possible without the group losing its particular aim. For this reason, the size of the group should be limited: it cannot be so big that it makes the injustice intangible or invisible. But it should not be too small either: otherwise no political movement or potentially winning strategy is possible anymore. Focusing on the citizenry of Antwerp as an actor of change helped the movements to find a temporary equilibrium which enabled them to win the referendum. However, at the same time this balance remained unstable and hid particular privileges and vulnerabilitie, as became clear afterwards: the intersectionality of air pollution was partly put aside to enable and sustain unity among the Antwerp citizenry (Kenis and Loopmans 2016).[6] As stated above, the fact that there are blind spots and exclusions is not a problem in itself, as they are inevitable. Every form of discourse construction will always include particular elements and exclude others. The point is not to refute this, but to investigate which decisions are made in this process, whether they are made visible and contestable and what the consequences are. Indeed, Mouffe's (2002, 2006) political theory is not about refuting the exclusions it generates, but about unmasking the ways in which a discourse conceals its own contingency, its own instability, and the conflicts it engages in (see also Kenis 2018).

Interestingly, a particular use of scientific information has been crucial in constructing Antwerp's citizens movements' discourse. Specifically, the decision to focus on PM as the pollutant of concern has largely shaped the movement's outlook and aims. Most importantly, this choice contributed to the concealment of intra-urban variations in health risks. When mapping PM, almost the whole city of Antwerp gets the same color. Overall, the picture is one of too high concentrations. Even the highly contested Antwerp ring road is barely visible on the map, and probably the Oosterweel connection would not be all too visible either. Because of its chemical and physical characteristics, PM is not a good indicator of traffic-related air pollution, even if road transport is an important cause. Maps based on black carbon or nitrogen dioxide (NO_2) show an entirely different picture. The ring road and other main roads are highly visible, while the further one goes from the ring and other main roads, the more red changes to orange, to yellow, and to green. Because of its chemical and physical characteristics, mapping NO_2 gives a much more differentiated picture of traffic-related air pollution.

It is a paradoxical observation. The movement's focus is on traffic-related air pollution, but the main nodal point around which its discourse is woven, PM, does not reflect this. As a representative of the movement claimed: "[t]here is no city in the world where they know more about PM than Antwerp." But PM is probably not the main, or at least not the most differentiating, health risk that arises in the context of the movement's main focus, the ring road.

As mentioned earlier, this focus also has an effect on the process of politicization. Interestingly, different measurements not only underpin different narratives, but also inform varying us–them distinctions and thus varying levels and kinds of politicization. While citizen movements in Antwerp have been astute in pointing to the spatial differentiations between Antwerp and other places, they pay much less attention to intra-urban variations and the related intersectionalities and social differentiations. This not only has a significant effect on the kind of environmental discourse that the movements construct to further their aims, but also influences the kind of measurements that are promoted as a result. In this way, the decision to focus on a particular pollutant reaches beyond mapping and framing into policy answers and solutions in an interwoven and intangible way. Interestingly, targeting PM means focusing on the general quantity of traffic: too many vehicles on too many roads. Citizen movements in Antwerp therefore demand the cessation of the construction of the Oosterweel connection. To the problem of too many cars, the logical answer is: no more roads.

The case of the city of London: NO_2 is bad

London is another city where air pollution features high on the public agenda. Here too, citizen movements played a crucial role in focusing public attention on air pollution during the last decade. However, interestingly, quite different choices have been made in the efforts to make air pollution visible. To start with, instead of framing the health risks of air pollution in terms of loss of life expectancy, the predominant discourse has focused on the absolute number of premature deaths every year. Highlighting the fact that 9,500 people die prematurely due to air pollution in London every year has been crucial in framing air pollution as a "public health crisis" that urgently needs to be addressed.[7] Another important, and differentiating, choice that has been made relates to the use of European legislation as a discursive framework. Concentrating on the extent to which air pollution exceeds the limits set by the European Commission (EC) made it possible to call existing levels of air pollution "illegal" and to demand action on that basis. Interestingly, the levels of air pollution are just as illegal in Antwerp. However, the citizen movements there did not make that claim, or at least did not use it as a nodal point around which the mobilizing discourse of their movement was woven. This illustrates that there is a contingency to the particular choices that are made – choices that determine the way that air pollution is staged in different contexts. The central role of ClientEarth, an environmental law organization that tries to force action on air pollution by taking the government to court, is crucial here. One of the main aims of the organization

is to assist citizens in fighting environmental destruction in a legal way. Using European environmental law as an anchor point, the focus is on those pollutants for which legal limits are exceeded. As a result of political compromises at the European level, the limits set for NO_2 are much closer to World Health Organization guidelines and therefore much more stringent than those for PM.[8] As a result, NO_2 limit values are a lot more severe and exceedances take place much more frequently. Summarized, the construction of air pollution levels as "illegal" was only made possible by focusing on another pollutant, namely NO_2.

However, the focus on NO_2 was not just a result of the adoption of a legal perspective; it also stemmed from the fact that most citizen movements that deal with air pollution in London originated in specific streets, boroughs, or neighborhoods, rather than being city-wide initiatives from the outset. Since their initial concern was the extent to which their particular borough, street, or neighborhood was particularly badly affected by air pollution, their focus quickly turned to NO_2.

This focus on NO_2 strongly affects the way air pollution is represented or imagined in spatial terms. Whereas the case of Antwerp exemplifies how concentrating on PM leads to general differentiations between cities or between cities and the countryside being highlighted, the emphasis on NO_2 in London yields a much more refined pattern of spatial and thus, potentially, political differentiation. Interestingly, the London strategy does not only draw attention to the center of the city as a place of high levels of pollution and to the need for action to mitigate this – it also engenders and facilitates a politicization along lines of ethnicity and social deprivation.

However, this focus on a different pollutant is mirrored not only in a different type of environmental justice claim – focusing on differences "within" the city – but also in more environmental justice claims as such. A short media search immediately shows that terms like "justice" and "equality" are much more frequently linked to air pollution in London than in the Antwerp case. Furthermore, there is far more research dealing with the relation between air pollution and ethnicity or social deprivation. The special importance that is given to this issue was highlighted when a political scandal broke out in 2016 over a report linking exposure to air pollution to social deprivation which the then Mayor, Boris Johnson, was accused of burying (Vaughan 2016a). The report, titled *Analysing Air Pollution Exposure in London* (King and Healy 2013), was commissioned by the Greater London Authority in 2013, but never published. It revealed that 433 of the 1,777 primary schools in London are located in areas that exceed European limit values for NO_2 – and that 83% of those schools are in deprived areas.

In the London context, analyses in terms of class or race are also more generally seen as common and acceptable ways of understanding the issue (Kenis

2017). Most notable in this regard was the action of the citizen movement "Black Lives Matter" in September 2016, when activists blocked London City Airport. They used the slogan "Black people are the *first* to die, not the *first* to *fly*" and declared that air pollution is therefore a racist crisis. In the weeks after, the claims of the movement were backed by studies showing that black communities in London are indeed disproportionately exposed to air pollution (King and Brook 2016; Vaughan 2016b). Environmental racism was considered a fact. In Antwerp, on the other hand, citizen movements felt that bringing in a similar argument or terminology would harm their movements (Kenis and Loopmans 2016). They did not consider it as the right way to frame the problem, even though the relations between social deprivation, ethnicity, and air pollution are similar to those in the London case (Loopmans et al. 2017).

In other words, there is an observable difference between the two case studies in terms of both the types and levels of politicization that are created through the construction of a particular scientific "fact." The decision to focus on a specific pollutant, respectively PM or NO_2, played a crucial role as a vehicle for and justification of the movements' claims. Furthermore, these choices also brought different kinds of policy measures to the fore. In the London case, because of the focus on small-scale spatial varieties and patterns, there seems to be more of a call for small-scale actions to mitigate local effects. The risk is that this results in small-scale policies which only focus on particular neighborhoods or even streets, or, more problematically, in policies which "level out" pollution. Air pollution is mitigated in one area by simply shifting it to another area. The European limits are no longer exceeded, but neither does air quality improve as a whole. Examples are the transferring of polluting buses to routes where air pollution levels are lower (Cecil and Sleigh 2017) or experiments with anti-pollution bus stops and other – often expensive – techno-fixes which only deal with air pollution in a superficial and very local way (Fleming 2017).

Moreover, the focus on NO_2 has yet another effect in terms of policy measures that come to the fore. As NO_2 is above all a by-product of diesel combustion, proposals like the extension of the low emission zone and the diesel scrappage scheme figure high on the public agenda. These proposals are underscored by slogans like "Ban diesel" or "Doctors against diesel." The result is a further differentiation: the focus is less on reducing the amount of traffic as a whole, but mainly on cutting down the number of cars that contribute to a particular kind of pollution, in this case NO_2.

What is of special relevance in the context of this chapter, however, is to elucidate the interplay between the focus on a particular kind of pollutant and particular political narratives. The choice of a particular pollutant (respectively PM or NO2) is not just related to another scientific "truth" about the spatialities

of air pollution, and thereby to particular political focuses and actions. Public reports and statements also tend to use those maps which favor their case. The process of discourse construction should thus be considered as circular. It moves from the construction of a scientific fact to the development of political discourses and back again, in an iterative process which weaves scientific (and) political elements into a more or less coherent – though always contentious – narrative.

Conclusion

As I stated at the beginning of this chapter, uneven distributions of air pollution do not acquire a place on the public agenda all by themselves. Scientists, policy makers, citizens, and a whole range of other actors are needed to translate air from a largely invisible social-natural artifact into a political issue. This process of translation entails making choices and this inevitably results in inclusions and exclusions that inform particular forms of politicization and preclude others. The staging of particular "us–them" distinctions is crucial here, as they define which environmental injustices are brought to the fore. Though making choices is unavoidable, the choices that are made are never neutral. Different ways of staging the problem appeal to different actors, generate different fault lines, trigger different political passions, and help explain the (lack of) activity of citizens and other actors.

Starting from David Harvey's (1996) claim that justice and geography matter together, Gordon Walker (2011, 39) argues that "how space is conceived will open up certain avenues for claiming environmental injustice, and close down others." Furthermore, he argues that this also works the other way around: "how environmental justice is conceived will bring forward certain understandings of space and hide others" (Walker 2011, 39). This is what we have seen happening in the cases of Antwerp and London in relation to particular choices of scientific "facts" and how they are interpreted. I have shown how in the case of Antwerp a kind of environmental justice discourse was mobilized, based around the claim that it is not fair that the citizens of Antwerp are more exposed to air pollution than people living in other cities or in the countryside. At the same time, this discourse failed to politicize other distinctions and fault lines, such as those based on ethnicity of social deprivation. This depolicitization was linked to a particular representation of space: more spatially refined patterns of air pollution, differentiating between levels of air pollution within the city, were not revealed. This shows how spatial and environmental justice are both intrinsically interlinked and at the same time inevitably plural. There is not just one space,

not just one environmental justice that can be claimed, but rather a continuous negotiation about where to draw the fault lines, about which "us" and "them" is created or rendered (in)visible, about how to color in the maps. These negotiations do not only happen between actors but also in the (collective) minds of individuals and movements. In this interplay of elements, "different forms and scales of space" can become "a strategic resource" for movements (Walker 2011, 40). As Walker argues: "[j]ust as 'different groups will resort to different conceptions of justice to bolster their position' (Harvey, 1996, p. 398), so will different groups work with different understandings of the spatiality of the issues at hand" (Walker 2011, 40).

Fundamentally, there is no right or final answer to these disputes. There is an unavoidable tension in terms of where fault lines should be located, and every decision involves a risk: adopting a large-scale perspective may make relevant spatial differentiations invisible, while focusing on the smaller scale may lead to such a high degree of fractioning that no movement can be built on such divided foundations. The challenge is thus not to overcome these disputes. Indeed, what is important is that these disputes should be recognized for what they are, and not concealed under a veil of so-called neutral and objective scientific facts. Maybe paradoxically at first sight, they should not lead to the conclusion that everything is political or ideological and therefore one should not search for the facts anymore. As Bruno Latour (2004, 231) famously argues in his response to the reproach that his theory of deconstructionism would have played in the hands of post-truth ideologues: "The question was never to get *away* from facts but *closer* to them."[9]

Notes

1 This largely invisible character of air pollution could explain why air, in contrast to more tangible socio-ecological predicaments like food, water, or parks, remains a blind spot within the field of urban political ecology which typically deals with such issues (Véron 2006; Buzzelli 2008; Heynen 2013).

2 All these activities took place in the period 2014–2017.

3 With regard to the use of diverging measuring devices, the question is not only how accurate they are but also which impression of accuracy they give. By giving precise, decimal numbers, several devices which are on the market these days give a false impression of a level of accuracy which they cannot deliver.

4 Gary Fuller (2018, 124) refers to an old adage in air pollution science in this context: "No one believes the results from predictive computer models other than the modellers who make them, and everyone believes the measurements apart from the people who run the instruments."

5 For instance, reference is made to the Amsterdam norm which states that facilities for vulnerable populations like schools or nurseries cannot be built within a given distance of major roads.
6 As shown in Loopmans et al. (2017), the extent to which Antwerp citizenry is exposed to air pollution varies to a significant degree, depending on where they live. These differences in place correspond with differences in income and ethnicity-related variables.
7 In May 2016, a cross-party committee of Members of Parliament stated that air pollution is a "public health emergency" and called for immediate action to be taken on these grounds (Carrington 2016).
8 This information comes from interviews with scientists and policy makers.
9 Bruno Latour wrote this text in 2004, in other words before the term "post-truth" was widespread as an analytical tool. However, as Latour argues in that very same text, the challenge for intellectuals is to put themselves ahead of developments taking place in the world (or at least not to be always two decades behind) and that is what he famously did in his text. Though already significant at that time, Latour could not have known how relevant and salient this observation would be a few years later.

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