The Governing of the Air: A Case Study of the Chinese Experience

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Breathing together, sharing the fate
(Xinhua 2014)

This paper makes a contribution to the possibility of thinking about 'a politics of the air' by analysing some of the ways in which the air has become a site and subject of governance. I am using China as a case study to show how practical concerns over economic growth and social stability have led to a transformation in the way the Chinese state relates to the air. The paper argues that the state's historical dependency on economic growth is propelling attempts to keep the air 'breathable' and the weather 'controllable' so as to maintain social stability. The air has subsequently started to function as a calculable extension of state interests. Climate change and particle pollution are not presented, framed or perceived as a problem of existing politics but rather as a challenge to it. This paper will especially look at the state's infamous weather modification programme and the way it governs air pollution. I finish the paper by arguing for the possibility of thinking about a different politics of the air as a means to challenge ideas that accept the air as a passive medium of state interest.

Introduction

Many of the policy debates surrounding discussions on greenhouse gases and climate change occur within an ideological vacuum in which liberal economic thinking and the economic interests of states prevail (see also Shove 2010). The result is that the need for short-term mitigation strategies and so-called technological 'quick fixes' triumph over more long-term, structural reforms in policy discussions on the problem of greenhouse gases and climate change.

Questions over the role of politics in attitudes and relationships to the environment are generally left unaddressed in debates on the quality of respiratory air. There is instead tacit agreement among policy makers that the problem of a changing climate and deteriorating air quality does not revolve around the historical and ontological nature of the relationship between politics and the environment. The medium of the air itself seems rather to have become the intentional target for and extension of a narrow economic utilitarianism. Swyngedouw (2011, p. 77, 78), writing on 'the policing of environmental concerns', describes how '[d]isagreement [on questions of the environment] is allowed, but only with respect to the choice of technologies, the mix of organizational fixes, the detail of the managerial adjustments, and the urgency of their timing and implementation, not with respect to the socio-political framing of present and future natures'. The problem of air pollution and climate change, in other words, is not framed as a *problem of* an existing politics but rather as a *challenge to* sustaining this politics. The air has in this process of 'depoliticisation', which I broadly conceptualise as the colonising of the political by a liberal utilitarian economics, become a domain that is said to require governing, policing and domestication through the means of technology.[i] There is, in other words, no longer room to relate to the air in a different manner than through its conceptualisation and use as a means, medium and resource of a distinctive form of liberal governmentality.

The polluting of air is not a new phenomenon, of course. However, recognition of the air as a biopolitical concern only arose at the moment it started to 'break down' and needed 'fixing.'[ii] Anthropogenically induced climate change and particle pollution were, in other words, only recognised after their effects started to have clear biopolitical consequences for governance. The World Health Organisation (2014) recently announced that air pollution is annually responsible for seven million premature deaths worldwide. The US Environmental Protection Agency (US EPA 2014) calculated that aerial pollution costs the US '$280 billion in annual health benefits'. 'Clean' air and the practise of respiration have subsequently become crucial components of a very bodily biopolitics of the state. Increasing occurrences of extreme weather conditions causing drought, widespread desertification and flooding have only contributed more weight to the economy in debates on the breathable air and the Earth's climate system. The air and atmosphere have subsequently become imagined as media that require securitisation and governance. This entails a gradual shifting from the position of a taken for granted aerial environment to a conceptualisation of the air as an ideal and quantifiable form of output (see also Lövbrand et al 2009, Yusoff 2013, p. 2806).

This paper addresses the challenge that the air poses to politics and looks at the way states react to it by analysing the country where the governance of air pollution and climate change have become most urgent. China recently surpassed the US as the world's largest producer of greenhouse emissions. Despite strenuous efforts on the part of the Chinese government, CO2 emission levels in 2012 were almost double to those of the US (PBL 2013). Studies by scholars from

the Chinese Academy for Environmental Planning and the Chinese Academy of Sciences (Zhu et al 2013) showed that aerial pollution is annually responsible for 350,000 to 500,000 premature deaths[iii]. The direct economic impact of pollution is no less compelling (Stern 2006). The World Bank (2012, p. 249, cf. GCEC 2014) writes that 'China's level of environmental degradation and resource depletion in China is valued at approximately 9% of … gross national income'. Aerial pollution and its medical and environmental effects are swiftly becoming the main causes for nationwide protests and demonstrations. The severity of the situation has forced the Chinese state to start thinking about ways in which it can overcome the political challenges that a polluted air poses to political and social stability. The State Council (Chinese Government 2013) recently responded with an unprecedented 'Atmospheric Pollution Prevention Action Plan' (*daqi wuran fangzhi xingdong jihua*) which explicitly targets the air as a site of governance for human security.

China's reformulation of its relationship to the air is by no means unique but rather, as said, emblematic of a more global and historical shift towards an increasingly governmental attitude towards the air. This 'taking to the air' occurs in the midst of a growing consensus among climate scientists which subscribes to the fear that it is impossible to foresee either a significant or a sufficient drop in future carbon emissions. Scientists (Teller 1997, Crutzen 2006) have started calling for other means to mitigate the social, economic and biological effects of climate change and aerial pollution. This so-called 'Plan B' sees geoengineering as the only means to 'fix' the air. Given China's status as the world's largest coal consumer, challenges of air pollution are strongly correlated, if not conflated, with fears over climate change. The Chinese state has consequentially and perhaps unsurprisingly become one of the biggest supporters for a redesigning of the atmosphere. The country at present already hosts the world's biggest weather modification programme. Climate experts have described it as the 'epicentre of all weather modification activity' (Bill Woodley in Scheppers 2011, p. 34).

This paper analyses the ways in which the air has become a site of governance by looking at attempts in China to technologically domesticate the air in a similar way that the Greek mythological figure Prometheus tamed fire. The first section discusses the unfolding environmental crisis which led to this development in China. The case of China shows the extent to which the environmental condition of air can challenge state legitimacy. The second section shows how this eco-political challenge has induced the state to an aerial engineering project in an attempt to offset a luring 'airpocalypse' (*kongqi mori*). Rather than engaging with the politics responsible for the problem of the air, the state is turning to a technological project of atmospheric reengineering. The last section discusses some of the ways in which the air in China is becoming an instrument of governance by looking at the ways the state has started to adopt a strategy of care for the air. The section looks at how the state's technological attitude to the air is informed by a sentiment of care which does not directly focus on the

body but rather targets the environmental conditions that help maintain the body. The section concludes with a call to bring back the question of the political in discussions on the air. I argue, via the work of the French feminist Luce Irigaray (1999), for a need to rethink existing technologically instrumental relationships to the air and for a turn to an alternative politics which challenges the concept of the air as a technology of governance.

The Air in China: A New Domain of Governance

Air pollution has a long history in China. Economy (2010, p. 55), writing on the Confucian and Communist disciplining of nature, notes that 'China's history suggests a long, deeply entrenched tradition of exploiting the environment for man's needs, with relatively little sense of the limits of nature's or man's capacity to replenish the [E]arth's resources'. The country's environmental conditions started deteriorating most dramatically in the aftermath of its so-called 'opening-up' reforms in 1978.

The consequences of environmental degradation have proven detrimental for both the economy and the health of its population. Air quality measurements conducted in 2014 showed that air pollution in China's coastal cities has reached hazardous levels, leading annually to hundreds of thousands of premature deaths (WHO et al 2009, Wang et al 2013). Pollution has a similar suffocating effect on the country's economy. Environmental degradation and airborne toxins are estimated to cost the economy annually between 3.5 to 8 percent of GDP (SEPA & WB 2007). Heavy industrial activity and ensuing altering climatological conditions have also led to increasing chances of extreme weather conditions, water shortages and declining crop yields (e.g. Tao et al 2006, Zhong 2013). The fact that China's burning of coal is responsible for both 80 percent of its CO_2 emissions as well as being the main culprit for the hundreds of thousands premature deaths shows that climate change and air pollution constitute an interconnected environmental challenge to the state. Recent findings revealing that levels of coal consumption and production are even higher than initially anticipated attribute only greater weight to this challenge (Figure 1).
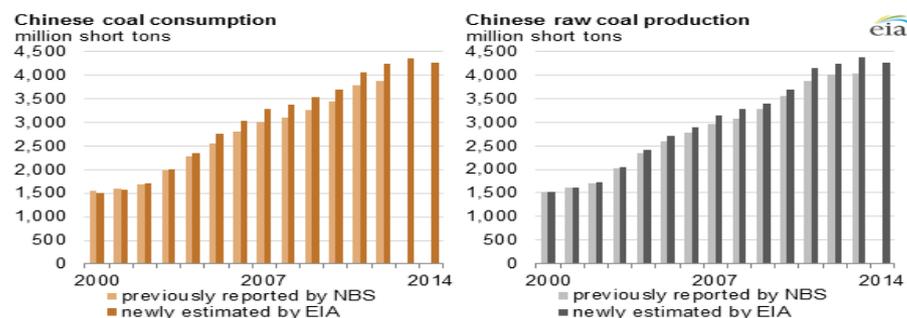

Figure 1: Data compiled from the Source: U.S. Energy Information Administration (EIA) and the China National Bureau of Statistics (NBS) (published in EIA 2015)

The burden of industrialisation, however, is not equally shared across the country, which further problematizes the challenge of governing the air. The unevenness of aerosol transporting dust storms and national differences in industrial activity expose regional differences in air pollution. While it is true that some regions are better off than others, very few remain unaffected. Only three of 'China's seventy-four cities met the national standard for "fine air quality" in 2013' (Wong in Saikawa, 2014). The fact that the urban environment continues to expand has meant that China's official twelfth five-year plan on air pollution anticipates 'pollution interaction and transmission between cities to become more prominent' (MEP et al 2013, p. 8). Neither is the diffusing geography of atmospheric pollution confined to the interior of China's borders. Recent research (Wang et al 2014) on aerosol pollution in Asia discovered, for example, that anthropogenic particles are influencing atmospheric currents above the Pacific Ocean, causing changing weather patterns far outside Chinese territory. The complexity of the geography of 'Chinese' pollution is mirrored by its diffused geographic origins. The causes for pollution in China are inseparable from its nodal position as a global manufacturing hub within the wider global political economy.

The increasingly visible environmental consequences of China's reintegration in the international economy has resulted in mounting public discontent that manifests itself in rapidly rising waves of large-scale protests. The environment has now surpassed land expropriation as the main motivation for the more than 180,000 popular protests that take place across the country each year (Economy 2014). The prospect of political upheaval recently compelled Premier Li Keqiang to militantly declare 'war' on the polluted aerial environment (China Digital Times 2014). The government last year banned the construction of new coal power plants, promoted public transparency on pollution levels, initiated local awareness campaigns and announced plans to launch the world's largest national carbon market (Fialka 2016).

The act of declaring 'war' on something which is internal to the political-economic machinery of the state is characteristic of a more general attempt to imagine the polluting of air as something that is exogenous to the realm of the political. The polluted air is not framed as a problem *of* existing politics, but rather as a challenge *to* it. The central government has a vital political interest in the health of the air to sustain the economic growth it needs for consolidating its political legitimacy and avoiding public unrest over natural resource shortages and environmental disasters.[iv] Indeed, as Shapiro (2012, p. 9) writes, 'China's handling of its environmental crisis has become of critical importance to the country's stability and the legitimacy of the government'.

The growing interest in the environment has led to an instrumental 'rediscovery' of the importance of the aerial environmental as something that needs controlling and regulating to function normally. The normality of the air is, in accounts of aerial pollution, implicitly and

explicitly defined on the basis of its conduciveness to economic growth and political stability. A 'normal' air, a 'good' air, is one which does not significantly impede on economic productivity and does not harm the biopolitical health of its respiratory population. The air, in China's recently announced 'new normality' (*xin chang tai*), is interpreted as a set of variables that can be monitored and, as I will discuss shortly, altered if and when considered necessary.

China's distinctive 'scientific' pragmatism (*kexue fazhan guan*) has been described by political economists as a straightforward 'commitment to doing whatever it takes to promote growth while maintaining political stability' (Breslin 2011, p. 1328). The air, in such a paradigm, is perceived and presented instrumentally, as that which requires taming and domestication to become sufficiently predictable and productive for the health of the economy and the stability of the political system as a whole.

One consequence of the bias towards technological solutions to environmental problems has been the government's plan to install air quality measuring devices in all of the country's 286 prefecture-level cities by the end of 2015 (Chinese Government 2013). The next sections will more elaborately engage with some of the details and ramifications of this prevalent scientific attitude to the relationship to the air. For now, it bears emphasising that this attitude is informed by a utilitarian rationality that finds its roots in a distinctive political pragmatism.

The remembering of the economic and biopolitical importance of 'clean air' has thus far not translated in a change in or questioning of the politics responsible for the polluting of the air. The air is instead politically appropriated and technologically annexed to secure and serve the same political and economic agenda that has been historically responsible for the problem of air pollution and unpredictable weather patterns. This way of thinking about and relating to the air is, of course, not unique to China. Scientific discourse has already for a long time monopolised discussions on 'the environment' while ignoring that the root causes of environmental deterioration are, first and foremost, social. Questions about who speaks for nature, with what authority, forms of knowledge and political purpose are largely left unproblematised. However, these are politically pivotal issues for the way in which we relate to and think about the air. Szerszynski (2010, p. 74) writes that this omission signals 'our political inability to engage in directly political and social argument and strategies about re-arranging the socio-ecological co-ordinates of everyday life'.

The social consequences of China's rampant pollution and the nature of its political system, marked by the necessity of political stability, provide little opportunity to politicise and address any of these more structural concerns. The reality is rather that thinking about the relationship to the air is dominated by a scientific pragmatism and

technological determinism which prefers quick fixes and ignores the fact that China's 'bad' air has been the historical product of bad politics.

The focus on 'fixing the air' transformed it from being a forgotten medium into a site of and instrument for governance. This transformation has resulted in a general biopolitical rethinking of the relationship to the air. To put it crudely, the air is conceived as a controllable medium which translates itself in quantifiable output data to be collected and monitored for effective governance. Such an instrumental approach to what essentially is a political problem forms one of the reasons why research on geoengineering and weather modification programmes have become such popular subjects in public debates in China. Research on geoengineering has recently even been listed as a top priority by the government (Hamilton 2013). The next section discusses in more detail how the appropriation of the air by a narrow economic form of politics has led to a technological reengineering of the atmosphere. I argue that the relationship to the air is increasingly becoming one which is securitised not only through scientific, but also military means.

Engineering the Air

The Chinese state plays an active role in the promotion and funding of geoengineering research and weather modification projects. These two anthropogenic technologies are sometimes conflated in the literature, but in the Chinese context serve largely different purposes.[v] The practise of weather modification, primarily through 'cloud seeding', is deployed to serve as a technological instrument to cause or prevent precipitation and to clear the air from smog particles. The wider banner of geoengineering, which involves practises such as the spraying of sulphate aerosols, is in contrast used to remove carbon from the air. It could be argued that while weather modification busies itself with local weather patterns, geoengineering focuses more on geographically larger climatological shifts.[vi] The remainder of this section will primarily focus on the practise of weather modification as a technological means to domesticate the air.

The use of the weather as a means to govern has a long history in China (see e.g. Nieuwenhuis 2015) but has become a more acute, technological and pragmatic matter of concern as a result of widespread particle pollution and increasingly extreme weather events. These developments helped shift attention in the governance of the weather from being solely focused on collecting data for interpretative models of prediction to speculations about the possibility of actual weather intervention. The Chinese Government recently stated that it 'aims to build a relatively complete weather modification system by 2020' (China Daily 2012b). The ambitious 'National Development Plan on Weather Modification 2014-2020' (NDPWM—*Quanguo rengong yingxiang tianqi fazhan guihua*, (2014)) will 'divide the country into six [climatologically distinctive] regions and set up an interprovincial mechanism for weather control' (China Daily 2013b). Laboratory

research will primarily focus on 'aerosol, cloud, fog, precipitation and weather alteration' in an attempt to both relieve drought conditions and clear polluted urban skies (China Daily 2015). The plan shows how meteorological research has become a 'top priority' (*Zhong zhong zhi zhong*) for the Government (Chinese Government 2015). The plan (in Gasser 2016, p. 25) states that 'artificial weather, in ensuring food security, protecting the environment and major events, has become an important measure for governments at all levels to strengthen disaster prevention and improve public services, agriculture and water security nationwide'.

The environmental crisis in China and the state's aforesaid reliance on economic growth for legitimacy has led the country to swiftly become the world's laboratory for a subject that in many discussions in the 'West' remains a highly contested issue (see e.g. North 2015). Edney & Symons (2013) anticipate that China will also play a key role in the global future for the possibilities of redesigning the weather. According to the UN's World Meteorological Organisation (WMO 2013, p. 2), there are at present already 42 countries with 'active weather modification projects'. The report (2013, p. 5), however, notes that 'China by far has the largest investment in both operational programs and weather modification research programs'.

As previously mentioned, China already hosts the world's largest weather modification programme. One of the primary objectives of the nationwide Weather Modification Office (WMO, *Rengong yingxiang tianqi bangongshi*) is, according to the website (http://www.bjmb.gov.cn) of its Beijing office, 'the development of artificial weather modification operations under the leadership and coordination of the people's government'. The WMO, installed in 2007 and supervised by the China Meteorological Administration (CMA, *Zhongguo Qixiang ju*), employs some 47,700 part-time and full-time workers from around the country (China Daily 2012a). It boasts a fleet of over 50 aircraft, approximately 7,000 rocket launchers and around 7,000 antiaircraft guns used for cloud seeding purposes (China Daily 2012a).[vii] There has additionally been reports about experiments in the development and deployment of drones for cloud-seeding purposes (China Daily 2014, CNN 2014).

The legal framework surrounding weather modification in China reveals an explicit underlying economic rationale. The 2002 law for the 'Regulations on Administration of Weather Modification' (*rengong yingxiang tianqi guanli tiaoli*), for example, states that weather modification is intended 'to mitigate or avert meteorological disasters and properly exploit climatic resources' (State Council 2002, article 3).[viii] The idea of weather adjustment for economic gain is indicative of the extent to which the atmosphere is appropriated by the state.

In the context of China's decentralised state apparatus, in which local governments are responsible for generating their own economic growth, the trumping of the economy has only further accelerated the

annexation of the air, and its dependency on economic growth has led local governments to become strong advocates and active agents in the dissemination of weather modification projects. Guo & Zheng (2009, p. 240) write that modification practises have taken place 'in over 30 provinces, 24 of which are presently using aircraft with AgI [Silver iodide] flares [for] rain enhancement operations'.[ix] The programme ran in 2010 a staggering 840 flights, covering roughly a third of China, in an effort to either precipitate or avert rainfall (China Daily 2010).[x] The total number of weather manipulations, using a variety of other means such as rockets and balloons, is higher still. The CMA stated recently that its weather modification programme conducted '[s]ome 560,000 manipulations of the weather … since 2002 … [releasing] 489.7 billion tons of rain and [saving] about 66 billion yuan (USD 10.4 billion) in economic losses' (China Daily 2012a). The government more recently announced that the aforementioned NDPWM 2014-2020 plan is anticipated to nationally add more than 60 billion cubic meters to annual rainfall (China Daily 2015).

Over the last few years, the central government has started to become increasingly involved in both subsidising local efforts and funding national weather modification projects such as those used during the Shanghai Expo (2010), the Asian Games (2010) and the Beijing Olympics (2008).[xi] China's weather modification programme surprised the world in 2008 during the Beijing Olympics with its promise of blue skies. Cloud-seeding technology was repeated, despite its unclear effects on weather patterns, during the 60th anniversary of the PRC that took place the following year. The operation was tightly run by the People's Liberation Army (PLA) which oversaw the injection of silver iodides into the body of the air (Xinhua 2009).

Weather patterns were computed, predicted and carefully monitored by a specially purchased IBM supercomputer (IBM 2007). The PLA more recently updated its computing capabilities and built the world's hitherto fastest supercomputer (China Daily 2013a). Supercomputers, such as the *Tianhe-2*, are equipped to collect vast amounts of data to improve both global and longer-range weather predictions (see also Nieuwenhuis 2015). However, as already shown by others (Dessai et al 2009, p. 67), the possibilities for certainty and accurate predictions are flawed and limited by a 'level of irreducible ignorance in our understandings of future climate'. The pitfall, however, has not impeded the state's appetite to compute, predict, control and govern the air[xii]. Quite the opposite is true.

Attempts to monitor and modify the weather, often with military undercurrents, are emblematic of the way the air and the atmosphere are currently perceived in policy circles. China is certainly not unique in this regard.[xiii] Growing popular and academic attention to climate change as a threat to human security has globally led to greater military involvement in attempts to 'securitise' the environment (see e.g. Deudney 1990 among others, Dalby 2009). The increasingly turbulent nature of the climate and its long historical polluting seem to have

transformed the nature of the aerial environment from being the anonymous source of life to the omni-visible adversary of everyday politics.

The question of 'security against what', in the debates on pollution and climate change, is largely disregarded. The collaboration between science and the military in the researching, monitoring and (re)designing of the air seems rather intended to police and control the aerial environment, so as to make it calculable, predictable and again productive for and conducive to a narrowly conceived state-centric politics. While it is true that China is not exceptional in this regard, its distinctive political context and precarious environmental situation compels it to operate at the forefront of debates on the question 'what should be done about the air'. The last section discusses how the technological attitude to the air is not limited to atmospheric weather patterns but also has come to inform the question of governance on a more local level. I argue, as I have done in different ways elsewhere (e.g. Nieuwenhuis 2016, forthcoming), that the respiratory air is in the process of becoming a key political concern. The section closes with a critique of the supposed inevitability of this process by directing attention to alternative imaginaries of and relations to the air.

A Caring Air

The 'everywhere' of particle pollution means that the air can easily be measured by both civil society groups and non-Chinese state actors.[xiv] The problem of the totalising effects of mobile air pollution for state legitimacy is eloquently expressed by a representative of China's oldest environmental NGO: '[With air, the government feels that] mass protest is just outside their door if they don't do anything. *It's there, in everyone's eyes*' (Hornby 2014, emphasis added).

The sensible and measurable quality of the air propels the government to take on a pastoral role to secure the biological wellbeing of its population. The public emphasis on clean air shows awareness that political legitimacy will increasingly be assessed on the basis of whether the Government presents itself as 'caring' enough for the air that its population inhales. A narrative has started to emerge in which the state is transformed from being an offender to a defender of the respiratory environment. The idea of, and emphasis on, 'clean air' and 'blue skies' embody and serve a distinctive biopolitical purpose, as I will show shortly. Indeed, as Whitehead (2009, p. 222) more historically in the British context remarks, 'the atmosphere provides a potential site for collective forms of governmental action … Understood as a vector of power, which quite literally moves through multiple subjects, effectively governing the atmosphere appears to promise the goal of caring for "all and each"'.

The promise of care occurs under the illusion of the caregiver's control. The myth of control rests on the assumption that the air is governable

through the technological domestication of climate change and air pollution.

It is perhaps not surprising that technology, the instrument of scientific pragmatism, has been granted a crucial function in the development of greater care for air in China. The 'fixing' of the air is believed to reside in more data and better technology. Such technologies are, in contrast to previous pastoral technologies of care, no longer targeting social relations as such but are instead meant to monitor, nurture and tune the environmental conditions necessary for social bodies to be and remain healthy.

The move to care for the air has resulted in an impressive number of initiatives to awaken what Whitehead (2009, p. 224, 231) describes as a collective sense of social 'atmospheric consciousness'. The number of government-sanctioned environmental NGOs (ENGOs) has risen already to almost 10,000. These organisations work not so much *against* the state but *with* it towards a 'collective struggle for clean air' (Zhang 2015, p. 7) by establishing, what Zhang describes as, an '"imagined community" of respiration'. A telling example of how closely technology and atmospheric consciousness have become intertwined components in a national struggle against air pollution is the 'I Monitor the Air for the homeland' [*wo wei zuguo ce kongqi*] campaign in which phone applications play a key role in monitoring real-time air quality information in cities across China. Zhang (2015, p. 6) explains that the campaign compelled 'Chinese authorities to bring forward its timetable of stringent air control' working together towards what has been called a 'clean air alliance'[xv].

The sentiment of 'being in it together' was also conveyed by President Xi Jiping (in MOF 2014) who during an APEC meeting expressed the hope to see 'every day … a blue sky, green mountains and clear rivers not just in Beijing, but all across China, so that our children will live in an enjoyable environment'. Internet users mocked the obsession of blue skies and were quick to introduce the term 'APEC blue' (*aipaike lan*) to refer to 'something that is beautiful but fleeting and ultimately inauthentic' (Garnaut 2014). Earlier last year (2015), Beijing residents used a similar name, 'parade blue' *(yuebing lan)*, to describe the unusual blue skies during the parade for the commemoration of the 70th anniversary of Japan's defeat during WWII. The colour blue has aesthetically become synonymous with cities and sites associated with healthy breathing and care while the colour gray with pollution and political failure (Image 1). The colour has become tantamount to the state's ability to control the air. Obsession with blue skies have, since the Beijing Olympics, haunted the organisation of all major events in China and have led the authorities to announce the 2222 Winter Olympics as 'Olympic Blue' (Beijing Government 2015).

Image 1: "A large TV screen in Beijing's Tiananmen square shows a piece of blue sky against a smoggy backdrop" (published in SCMP 2013).

Another example of the emergence of a narrative that aesthetically politicises the air is the story of Xi's visit to Beijing's Nanluoguxiang district. The visit was covered by state media with photos under the headline: 'Xi Jinping visits Beijing's Nanluoguxiang amid the smog: Breathing together, sharing the fate' (Xinhua 2014) [*tong huxi gong mingyun*]. It was however not so much his visit to the polluted district which caught the attention of online discussants and commentators as the fact that he entered the heavily polluted area without wearing a face mask. 'Big Xi' was subsequently hailed (both ironically and poignantly) for showing solidarity with the beleaguered local residents. The phrase 'breathing together, sharing the fate' would come to have an enduring effect in cultural imaginations and was recently used as the subtitle of Chai Jing's (2015) widely shared and powerful video documentary 'A shared fate under the dome' [*Qiongding zhi xia tong huxi gong mingyun*].[xvi] Care for the air is also a central theme in the documentary which welcomes technological innovation as the antidote against aerial contamination.

Faith in technology is a running theme in all discussions on the challenge that the polluted air poses to existing politics. The air is in this discourse presented as a quantitative form of output which needs to be monitored before it can be altered, modified and ultimately 'fixed'. Such an attitude to the air results in the myth of a controllable aerial environment which purely exists and operates in service of state governance. The transformation of predicting the weather and measuring air pollution to the actual possibility of intentionally changing the air and the weather brings with it, as Yusoff (2013, p. 2801) writes, radical 'ontological and material shifts in the scope and scale of human agency in biophysical earth forces'. What does it mean to intentionally design the air? The possibility of weather modification and geoengineering require a certain '"ontological responsibility"' that accounts for the '"making"' of environmental conditions (Yusoff 2013, p. 2805). Galarraga and Szerszynski (in Yusoff 2013) explain that the new climates 'do not necessarily by themselves lead to specific moral

positions … But they force us to think about what it is to be a being that makes things, and what it might mean to bring the climate into the orbit of human making'.

The possibility for, and actual practise of the making and remaking of air compels us to rethink the way we relate to the aerial environment and also raises questions as to why thinking about the air has not already happened. Explanations for the lack of political enquiries into existing relations and attitudes to the air must, in the Chinese context, be sought through an analysis of the specific context in which the air has become a subject and an instrument of governance. The air in China is annexed to serve the interest of state politics. At the start of this paper I have stressed that the need for pragmatic solutions is the product of a state system which constantly seeks to maintain political and social stability. The system that thrived under a regime of burning fossil fuels is now haunted by the spectral particles and aerosols that it inherited from this 'success'. Rather than rethinking the politics responsible for the intoxication of the air, understanding the polluted air as a historical problem and not a mere challenge to it, air pollution and climate change are depoliticised as technological issues that just need 'smart' fixing. The result is an air which is first and foremost meant to function in service of economic productivity and biopolitical governance.

Conclusion

This paper does not want to give the false impression that China is unique in its governmental attitude to the air. The air has in a very short period of time become a political subject of much more global dimensions. Indeed, it seems easier to speculate its technological redesigning than to challenge the politics responsible for this necessity.[xvii] The authority of pragmatism and the idea of inevitability are especially visible among those scientists (e.g. Crutzen 2006, Crutzen & Schwägerl 2011, Kruger 2012) commonly associated with the concept of the Anthropocene. In this vision of technological domination, there is little room for questioning the place of the political, that is, the crucial space necessary to think, debate and imagine alternative relationships to the air.

The fate of the air seems instead to be firmly determined by the interests of a capitalist system which in a very short period of time has become both the offender of its polluting and the primary supporter for its redesigning. This circulatory logic is ironic, especially when considering that the air is defined by its very borderless, invisible and radically democratic nature. After all, every*body* inhales, exhales and is a part of it.

Despite the fact that we commonly share the air, atmospheric pollution annually costs millions of lives (especially in developing countries). Irigaray & Marder (2014) write that 'it appears to be a basic crime against humanity to contribute to air pollution … As for politicians,

despite proposing curbs on environmental pollution, they have not yet called for it to be made a crime'. Air pollution and climate change have occurred as a result of a historical lack of politicisation of the relationship all our bodies share with the air. The air remains viewed not as a political problem but as a challenge to a politics which seeks the answer of pollution in 'smart' fixes.

I want to finish this paper with a wish to imagine a different political relationship to the air, one that questions the anthropocentric appropriation and anthropogenic designing of it, and enables humans to embed themselves in closer proximity to the rest of nature. Such an imagination starts with the recognition that we share the air with members of our own species and with those of others. Irigaray (2014), writing together with the plant ethicist Michael Marder, notes that 'we must come to view the air, the plants and ourselves as the contributors to the preservation of life and growth, rather than a mesh of quantifiable objects or productive potentialities at our disposal'. Air is always already more than a medium to police and govern. As respiratory creatures we are constantly, yet not always consciously, reminded of our embeddedness in and indebtedness to it. The breathing of air signifies our largely forgotten co-dependency and co-existence with all animate others. 'There is neither life nor relation without autonomy and there is no autonomy without air … To forget air means forgetting the element that makes individuation and relation possible' (Irigaray 2000, p. 60).

Perhaps many will feel sceptical of the potential to realise such a wish, calling it naïve and unrealistic, however, recognising that our relationship to the air is a political product of history, a way of thinking. Ultimately, a choice should help in guiding us towards imagining an alternative, kinder and more caring relationship with the air and with fellow breathers. In contrast, a politics of scientific pragmatism and technological fixing, serving the securitisation of polluting economic social relations, will only be able to build an air as hostile and lethal as its own.

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Notes

[i] Swyngedouw (2011, p. 71, original emphasis), in a similar manner, describes climate change as the '*cause célèbre* of de-politicisation'.

[ii] In 1965 the US Government (1965) published the *Restoring the Quality of Our Environment* report, which is generally considered to have been 'the first

official government statement on global warming' (Fleming 2010, p. 238). The report was a major step towards what would become a quantitative understanding of the weather. Making the weather calculable allowed also for thinking about possibilities to engineering the climate against the threat of a warming planet. See also Keith (2000).

[iii] This is a modest estimate. The newly founded Global Commission on the Economy and Climate (2014) writes that 'PM2.5 pollution has been linked to 1.23 million premature deaths in 2010 (median estimate)—or, put in monetary terms, damages equivalent to 9.7–13.2% of China's GDP'.

[iv] Hamilton (2013) argues that '[c]limate-related disasters in China are already a major source of social unrest so there is a well-founded fear in Beijing that the impacts of climate change in the provinces could topple the government in the capital'.

[v] The term geoengineering is not clearly defined in the literature. The IPCC (2012, p. 2) describes its difference with 'weather engineering' and 'ecological engineering' as 'fuzzy'. Others (Low et al 2012, p. 174) explain that weather modification occurs nationally while geoengineering 'has significant transboundary impact'. Yusoff's (2013, p. 2802) analysis of the distinction is more interesting and explicitly political. She traces the historical genealogy of geoengineering's older weather modification cousin and writes that 'historical amnesia [of the Cold War] distances geoengineering from the rationalist fantasies of modernist control that permeated Cold War projects … What geoengineering gains in loosening its historical ties to weather modification projects of the 1950s is an ability to claim its precedence, as a 'new' solution to climate change. What it [i.e. geoengineering] perhaps fails to recognise in its Cold War genealogy is how the promise of former technological innovations already mark how politics are made in the gap between intention and actuality'.

[vi] The difference between the weather and the climate is both temporal and spatial. The climate is often argued to be the 'history of the weather' (see e.g. Edwards 2010, p. xiv). The difference between the climate and the weather deserves more attention than I can give it here.

[vii] The China Daily (2010) reports that at least 116,000 rockets and 890,000 artillery shells 'were fired to alter atmospheric phenomena' in 2010.

[viii] The head of the CMA, Zheng Guoguang (in China Daily 2012c), argued during the China's 12th Five-Year Plan period (2011-15) that 'our goal is to reduce losses caused by weather disasters from 3 percent of GDP last year to 1 percent by the end of the period'.

[ix] The WMO (2013, p. 5) more recently reported that 'every province except one has an active weather modification program in China'.

[x] The State Council hopes to 'increase annual precipitation by 60 billion metric tons and extend the coverage of artificial hail suppression to more than 540,000 square kilometres by 2020' (China Daily 2013b).

[xi] The earlier mentioned plan 2020 plan states that by 2014 nearly USD 177 million will be invested 'to build a regional weather intervention system in [north-eastern] China, including 12 weather intervention airplanes and ground-based facilities' (China Daily 2013b). Using official figures, Gasser (2016, p.

26) writes that the Chinese government has since 2008 'funded weather modification projects with a total of 1.723 billion yuan [USD 348 million], which splits up into 920 million yuan [USD 138 million] for operation maintenance, 750 million yuan [USD 112 million] for infrastructure and 53 million yuan[USD 8 million] for research'.

[xii] Greater technological sophistication and the rise of research on the possibilities for a global reengineering of the air has recently led to what some have called an 'Earth System *governmentality*' that is based on 'the range of practices that have produced the "coupled human and ecological system" as a thinkable and governable domain' (Lövbrand et al 2009, p. 12, original emphasis).

[xiii] The link between environmental science and the military in the designing of the air enjoys a long historical record (see, for instance, Sloterdijk 2008, Sloterdijk 2009, but also Fleming 2010, Harper & Doel 2010, Martin-Nielsen 2012).

[xiv] The ease with which information can be recorded and disseminated has recently been exemplified by the installation of a live-Tweeting air quality monitor on the roof of the US embassy in Beijing. The installation caused a minor geopolitical crisis between the two countries.

[xv] The so-called Clean Air Alliance of China (CAAC) is a 2012 initiative set-up by academics, policy makers and business executives. It is funded by the Chinese Energy Foundation, an institution run by the Chinese Ministry of Civil Affairs, as a 'platform for communication and cooperative projects, promoting best practices, and supporting the policymaking process' (SCMP 2013).

[xvi] The *Financial Times* (2015) reported that before officials decided to take the video down it had already 'been viewed more than 152m times on Tencent [an online media company] alone since its [first week of release]'.

[xvii] Indeed, the *Royal Society* (2009, p. 45) writes that we should not see geoengineering as an 'option of last resort … Assuming that acceptable standards for effectiveness, safety, public acceptance and cost were established, why should appropriate geoengineering options not be added to the portfolio of options that society will need and may wish to use to combat the challenges posed by climate change?'

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