

# Chapter One

## Introduction: Space, History and the Governing of Air Pollution

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### On 700 Years of Air Government

It is the year 1307 in medieval London. Rumours are abound that one denizen of the fledgling metropolis has been subjected to a gruesome penalty for perpetrating the most novel of crimes. This unnamed individual, it was claimed, had broken the recent Royal Proclamation banning the burning of sea-coal in the city. The punishment meted out to this early atmospheric felon, or so the tale goes, was torture, hanging and ultimate decapitation!<sup>1</sup> While it seems unlikely that such a punishment was ever actually carried out,<sup>2</sup> it was perhaps the nature of the crime, as much as the extreme form of the purported penalty, which would have concerned the fourteenth-century urban dweller. Before the Royal Proclamation of 1306 the idea that polluting the air could be deemed a criminal offence was simply inconceivable. The age of British atmospheric government had begun.

It is the year 2007 in post-industrial Britain. According to latest government figures, over four million readings have been made of the British atmosphere this year from a network of over 1500 government-sponsored air pollution monitoring stations.<sup>3</sup> This never-ending process of 24-hour air surveillance has recorded the varying concentrations of a heady chemical concoction of pollutants including ammonia, sulphur dioxide, trace metals, oxides of nitrogen, organic micro pollutants, particulate matter and various hydrocarbons *inter alia*. Only a small fraction of the incomprehensible volume of atmospheric knowledge produced by the British government in 2007 will be used to support the prosecution of air polluters. None has been utilised as a basis for summary execution!

This book explores the history of contemporary systems of air pollution government in Britain. To this end it is, in part at least, interested in what has been happening in British atmospheric government between 1307 and 2007.

It is clear that this conveniently demarcated historical epoch has been characterised by some profound changes in the ways that political authorities organise the governance of air pollution. It is also evident that a detailed study spanning such a long historical reach would be beyond the scope of a single volume. Consequently, while broadly positioned within this 700-year era, analysis is primarily concerned with the systems of air pollution government that have emerged in Britain since 1843. The year 1843 is significant in the history of British air pollution government for two primary reasons. First, it was in this year that the Parliamentary *Select Committee on Smoke Prevention* was established in order to discuss the ensuing problems of atmospheric pollution in industrial Britain.<sup>4</sup> Second, and as part of the operation of this Committee, 1843 witnessed the first systematic attempt made by the British government to forge close working relations with scientists in the crusade against the contamination of the air. More will be said of the 1843 Select Committee in Chapter Two, but at this point it is important to see this Committee as a crucial historical moment in the emergence of the knowledge-intensive and scientifically grounded systems of air pollution government that are now commonplace in Britain. It was the beginning of what this volume refers to as a system of atmospheric *government with science*.

The notion of atmospheric pollution is a complex and ever-changing category of analysis that has, at different times, incorporated germs, disease, dust, pollen, grit, smoke, fog, soot, sulphur dioxide, lead, radioactive materials, pesticides, chlorofluorocarbons, carbon dioxide and other visible and invisible substances (see DuPuis, 2004: 1–11). As Thorsheim observes, however, the processes that transform these various substances into pollution occur at the complex intersection between culture and nature (2006: 155; see also Douglas, 1966). Atmospheric pollution involves more than anthropogenic or environmentally produced contaminants simply entering the air. In order to become pollution, contaminants have to work with the pressure dynamics, weather patterns, thermodynamic systems and chemical exchange functions of the atmosphere, and produce culturally, biologically and politically unacceptable/intolerable air conditions. It is for these reasons that analysis will engage with the activities of meteorologists, climatologists, ecologists, chemists, medical experts, civic activists and policy-makers who collectively constitute the hybrid science that frames air pollution government in Britain.

## **Unpacking the Politics of Air Pollution Science and Government**

In many ways concern over the axis between atmospheric knowledge and systems of air government has never seemed more important. As I wrote

this book global media coverage of the quality of one city's air, and the systems of atmospheric government that are being deployed to combat associated forms of air pollution, have become almost obsessive. In August 2008 Beijing hosted the 29th Olympic Games, but alongside debates around human rights it is miniscule airborne particles (or particulate matter) that caught all of the headlines. These tiny particles were an object of concern for a phalanx of scientists and bureaucrats incorporating the International Olympic Committee, the Chinese government, the World Health Organization, the Beijing Municipal Environmental Protection Bureau and even the World Bank. Beyond the atmospheric hysteria that engulfed Beijing, there are three fundamental issues associated with the city's air quality debate that have direct relevance for the objectives of this volume. First, how and where is the quality of the air measured? Second, on what basis are standards for socially and ecological permissible levels of air pollution determined? Third, how can persistent forms of air pollution be effectively governed? The first question, concerning the scientific practices and locations of air pollution monitoring, was of particular significance in Beijing. In the build-up to the Olympic Games the regular air pollution readings taken by the Beijing Municipal Environmental Protection Bureau were joined by a host of other formal and informal monitoring devices operated by media outlets, international organisations and concerned athletes.<sup>3</sup> With so many different measurement devices, operating in so many different locations, and at various times of day, it was little surprise that there was so much uncertainty concerning the actual levels of air pollution in the city. In terms of setting permissible thresholds for pollution, the World Health Organisation recommended that levels of atmospheric particulates should not exceed 50 micrograms/cubic metre (World Health Organization, 2005).<sup>6</sup> Estimates of particulate air pollution in Beijing, made in the months before the Games, suggested that levels were in excess of 130 micrograms/cubic metre.<sup>7</sup> While providing useful governmental targets for air pollution abatement, as we move through this volume we will see that such thresholds of permissible atmospheric pollution are not always reliable predictors of the potential health (or environmental impacts) of pollution, and are themselves subject to much scientific deliberation. Perhaps the most significant implication of the events in Beijing for this study is the style of governmental intervention that has emerged in response to the identification of harmful air pollution levels. In answer to the air pollution problems of the city the Chinese government took the rather unusual step of closing down polluting factories and plants and, in the event of particularly severe air pollution incidents, removing up to 90% of the traffic from Beijing's roads (see Bristow, 2008).

There are important parallels between the science and government of air pollution in Beijing and the current situation in Britain. While it is important

to acknowledge that the levels of air pollution in Britain, and the associated threats posed to the environmental health of its citizens, are not as severe as the current situation in Beijing, air pollution remains a significant governmental issue. Severe air pollution events such as the London smog of 1991 (when nitrogen dioxide concentrations reached their highest recorded levels in Britain) were associated with a 10% increase in the death rate in and around the metropolis (Brown, 1994). A recent report by the Royal Commission on Environmental Pollution estimates that air pollution is, on average, responsible for 24,000 premature deaths in Britain each year, and claimed that the British State had been unsuccessful in addressing increasing levels of chemical pollutants in the atmosphere (Royal Commission on Environmental Pollution, 2007: 35–40).<sup>8</sup> The report also revealed that in 2005 the costs of air pollution to the British economy (in relation to the provision of medical care and lost working hours) were in excess of £9.1 billion (*ibid.*: 35).<sup>9</sup> As with the situation in China, there remains significant debate in Britain concerning what permissible levels of pollution are, how air pollution should be measured, and the role the government should take on issues of atmospheric pollution. Despite these parallels, however, a clear distinction does exist between the control and monitoring of air pollution in Britain and China: namely the styles of government deployed to address socioeconomic relations with the atmosphere. While China has been able to deploy relatively authoritarian systems of air pollution control in the short term, Britain has witnessed the emergence of very different strategies of air government that reflect a more liberal political tradition. The particular systems of atmospheric government deployed within liberal (and neo-liberal) societies, and the specific mixing of air and social power they involve, constitute a key object of enquiry within this volume.

## **Conceptual Parameters: Spatial Histories and Atmospheric Geographies**

The development of an historical perspective on the government of air pollution in Britain is important because it helps to reveal the contingent political decisions and scientific struggles that have contributed to the establishment of a contemporary apparatus of atmospheric knowledge gathering. History, in this context, helps to assert that what we know about air pollution, and the ways in which atmosphere are governed, are not inevitable parts of closed systems of air science and government, but are legitimate objects of political contestation and potential transformation. Yet the historical perspective developed through this volume does not only seek to position air pollution government in relation to the ways it has changed and evolved through time, but also explores the material conditions under which

it has even been possible to conceive of knowing and governing something as large and complex as the atmosphere. In this context, this volume presents a spatial history of air pollution government (see Elden, 2001; Rose, 2007). The notion of spatial history is utilised to reveal that not only have the axes connecting British atmospheric knowledge and government changed over time, but that geography has played a crucial role in the constitution of air government and in shaping the production of atmospheric knowledge. This is an account of history within which space is neither 'static', nor merely a 'cross-section through time': it is rather a '[s]phere in which distinct stories coexist, meet up, affect each other, come into conflict or cooperate' (Massey, 1999: 274). Two conceptual frameworks support the spatial history developed in this volume. The first is the history of governmental reason (or *governmentality*) developed by the French philosopher Michel Foucault (see 2007 [2004]; see also Dean, 1999). Foucault's governmental histories are important because they focus explicitly on the connections between knowledge and power within liberal societies, while revealing the historical specificities of governmental modes of rationality. The second conceptual framework that informs this project is a programme of research that is known collectively as the *Sociology of Scientific Knowledge* (see Shapin, 1995). This broad body of scholarship incorporates work within the history of science and science and technology studies, and collectively draws attention to the conditions under which scientific knowledge is produced and the processes in and through which such knowledge forms circulate. While more will be said of the connections and tension between these two intellectual traditions in Chapter 2, I contend that both provide crucial contexts for the development of an integrated spatial history of air science and government pursued within this volume.

While focusing specifically on the spatial and historical dynamics of air pollution government in Britain, this volume is also indebted to a much broader intellectual re-engagement with atmospheric questions within the discipline of geography. The commitment of the geographical discipline to the development of holistic scientific perspectives on the earth's environmental systems has meant it has had a long dedication to the study of the atmosphere as a complex socio-environmental system. It is in this context that geography has long provided a supportive home to climatologists, meteorologists and atmospheric scientists of various kinds. In recent years, however, there has been a distinct increase in work by so-called 'human geographers' addressing various aspects of atmospheric study. These new atmospheric pioneers are utilising the perspectives provided by anthropology, economics, the social sciences and history in order to develop new analytical perspectives on the air. Recent work by geographers has consequently explored the economic commodification of the atmosphere (Randalls & Thorne, 2007); the historical geographies of meteorological

knowledge production (Naylor, 2006); the associations between art and the representation of air pollution (Thornes, forthcoming); and the complex relationships that exist between the climate and human history (Endfield, 2007, 2008). Crucially, and in keeping within the intentions of this volume, the development of these new atmospheric geographies has not been based upon an antagonistic relationship with the physical sciences of the atmosphere (or the establishment of an aerial front, if you like, in the science wars), but on creative dialogues and new research partnerships between human and physical geographers.<sup>10</sup> Through a consideration of the spatial governance of air pollution, this volume hopes to contribute to this synthetic science of atmospheric study: a scientific project that embodies the integrative ethos of the geographical discipline as a whole (see Massey, 1999).

## **Timeframes and Conceptual Enclosures: On the Structure of the Book**

Although the issues of air pollution government, science and knowledge production weave their way throughout the different chapters of this volume, the book has been structured in order to facilitate detailed considerations of both different historical time periods and key conceptual questions. The organisation of this book has thus been deliberately designed in order to make the volume both comprehensive (in terms of the preservation of an historical narrative on modern systems of air pollution government in Britain) and comprehensible (in relation to the ways in which individual chapters conceptually interpret key themes in the history of British air government). What results is a series of chapters that simultaneously contribute to an overall historical infrastructure – revealing the development of air pollution science and government – while also facilitating a more detailed conceptual analysis of the key issues that have characterised modern atmospheric government in one State. It is in this context that the empirical chapters of this volume constitute interlocking, but not sequential, histories of air pollution government and science. To a certain extent the way in which any book is divided is an arbitrary exercise of ordering on behalf of the author. However, in order to be consistent with the historical methodology I establish within this volume, I have attempted to ensure that, while different chapters facilitate certain forms of conceptual focus and analysis, they reflect evolving historical processes of atmospheric government as opposed to an adaptation of history to suit preconceived theoretical concerns.

Chapter Two begins the historical narrative that structures this whole volume by reflecting on the 1843 Parliamentary Select Committee on Smoke Prevention. The majority of this chapter is, however, devoted to

charting the key conceptual concerns of this volume. It outlines the key conceptual and methodological contours of Michel Foucault's history of government and work within the sociology of scientific knowledge, while explaining the value of combining the insights of these two intellectual traditions within the study of air pollution science and government. Chapter Three constitutes the first main empirical chapter of this volume. It explores the origins of modern forms of air pollution government within various urban nuisance prevention and sanitary authorities and focuses on the particular challenges facing the creation of an optical regime of air science and government. Chapter Four moves on to consider the role of clean air exhibitions and associated educational initiatives in enabling emerging systems of scientific knowledge concerning the production and extent of air pollution to become referential contexts for personal systems of atmospheric reform and self-government. In the wake of the first International Smoke Abatement Conference, which was held in London in 1912, Chapter Five considers a series of attempts that were made to form the first instrument-based studies of British air pollution. Focusing on the innovative work of key scientists, such as John Switzer Owens and Sir Napier Shaw, and the Committee for the Investigation of Atmospheric Pollution, this chapter analyses the role of technological devices in the constitution of networks of government and scientific networks, and the impacts of the demands for governmental knowledge on the design and implementation of instrumental sciences of air pollution.

Building on the account of early, but highly fragmented, networks of air monitoring instruments, Chapter Six describes the process in and through which a national system of air surveillance was gradually instituted in Britain. Focusing on the development and implementation of the National Air Pollution Survey (that ran from 1961 to 1971) this chapter considers the role of spatial calibration in ordering the study and government of the atmosphere. Chapter Seven describes how the emergence of automated and digital systems of air pollution monitoring transformed atmospheric knowledge production and government during the 1970s and 1980s in Britain. Drawing on notions of telemetric territoriality and digital beings, this chapter explores the impacts of real-time and online atmospheric knowledge systems, and associate simulations of air pollution, on contemporary practices of atmospheric government. In Chapter Eight attention is given to the impacts that new systems of environmental thought and ecological science have had upon the constitution of British air pollution government. Critically questioning the extent to which air pollution government has moved from a concern with human health to an ecological rationality of atmospheric government, it outlines the application of ecologically inspired techniques of pollution analysis throughout different locations in Britain. The concluding chapter provides a review of the key analytical themes that run through the

constituent chapters of this volume. In addition to reflecting on key themes, however, Chapter Nine also considers the lessons that a spatial history of air pollution government with science in Britain can provide for the systems of air government that are emerging in response to contemporary forms of climate change and associated atmospheric threats.

In his foreword to the National Smoke Abatement Society's *Smoke Abatement Exhibition Handbook and Guide* of 1936, the then British Minister for Health, Sir Kingsley Wood MP reflected,

Provision is being made more and more to secure pure water, pure milk, and pure food. But every day we breathe a quantity of air much greater in weight than the quantity of food and drink which we consume (National Smoke Abatement Society, 1936: i).

It is clear that there is no more important, immediate or ongoing challenge to the efficacy of government than the ability to know and regulate the constituents of the air we breathe. The remainder of this volume explores the spatial narratives and entangled scientific endeavours that constitute one State's quest to address this challenge.