

Environmental Policy and Property-based Interests:
The Domestic and International Politics of Air Pollution in
Canada and the United States

by

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Abstract

This thesis provides an account of continuity and change in air pollution governance in Canada and the United States. In doing so, it explicates the role of property-based interests in this process. Property-based interests are spatially bound actors who seek to benefit economically from the use and sale of land. In pursuance of this objective, they tend to promote economic growth, although often this takes the form of managed growth within limits. They include, but are not limited to, homeowners' associations, local and regional chambers of commerce, issue-specific regional environmental organizations, and urban newspapers. As air pollution undermines the ability of these actors (or their members) to generate wealth from property holdings, they have historically provided much of the political will to address it by lobbying governments, engaging in litigation, promoting their cause to the broader public, conducting or framing research, and developing policy solutions. At the same time, the industrial interests causing much of the pollution (including resource processing, electricity generating, and manufacturing firms) are less concerned about the local or regional economy, and more with the health of the broader market for their products, and in keeping down the costs of production. These industrial interests tend to lobby governments and engage in litigation with the objective of preventing the imposition of costly regulation. In providing an account of the role of property (and, to a lesser extent, industry) in shaping air pollution governance, this dissertation employs the concept, common in the international relations literature, of a governance "regime." Four regimes of air pollution governance are examined: (1) the American domestic regime, (2) the Canadian domestic regime, (3) the Canada-US bilateral regime, and (4) the multilateral air pollution regime in which both countries participate. The accounts of the development of these regimes focus on the role of property-based interests in pushing for air pollution relief and industrial interests in resisting. The dissertation shows that policy outcomes tend to be the result of compromises between these two categories of actors, and also provides a framework for understanding how it is that some efforts at governing air pollution result in substantive governance, while others do not.

Acknowledgements

When I began the journey resulting in this dissertation, I approached it with the goal of understanding how air pollution governance has evolved over time and how the various domains of this governance relate to one another. To me, the fact that air pollution governance occurs both internationally and domestically promised a topic full of puzzles and challenges. Did it ever.

In short order I found myself blinded by the fact that the theoretical tools I had been trained in during my graduate school coursework were both too narrow to see air pollution governance in its various manifestations, yet too broad to suggest a starting place. I found that much of what I was told to investigate was ineffective, irrelevant, or misunderstood. Like photochemical smog itself, air pollution politics is the stuff of smoke and mirrors. Its inherently symbolic nature ensures that it is in oversupply, yet it is not always clear where it is coming from, what is real, and what is a sideshow best ignored yet begging for attention.

As I toiled in the metaphorical smoke, I read many observations by scholars and other experts I encountered which, at closer investigation, turned out to be highly questionable. I read that a trend is occurring toward the use of reflexive or voluntary measures. No. Policy follows science. Sometimes yes, sometimes no, and sometimes yes in a way that is environmentally destructive. The United States and Canada govern air pollution federally. Certainly for automobile emissions, but that is only a part of the story. The Canadian “national concern” doctrine has paved the way for the courts to play an important role in environmental (and thus air pollution) governance. Keep dreaming. Every rule the EPA passes is subject to numerous lawsuits. Strange...but perhaps now we’re onto something...

Living in Canada, I quickly became aware of the sensitivity Canadians have at times exhibited about air pollution travelling across the border from the United States. I read Don Munton’s analysis of Canada as environmentally dependent on the United States, and thought there must be reason for this sensitivity to environmental dependence apart from norms of ecological virtue. After all, Canada is the land of the oil sands. There must be an economic explanation for the politicization of the source-receptor relationship, perhaps related to competitiveness?

This is when I re-discovered George Gonzalez’s *The Politics of Air Pollution* (I had read it more than a year earlier but not initially realized the accuracy and elegance of its arguments). I found the distinction between the interests of property and industry to be consistent with what I had observed, yet on a wider scale than strictly in urban areas. Once I focused on the role of property-based interests as a persistent feature of substantive environmental governance, I found interesting variation, over space and time, in terms of the means through which these interests are channeled. They acted as catalysts for air pollution policy in Toronto in the 1950s and New York in the 1980s, for example, but in different ways. I found that the EPA is indeed important in air pollution governance, but not in a top-down way; rather, as a site of contestation between different

interests competing for the policy they believe favors them economically. I further found the importance of looking at these local political processes for an understanding of what happens internationally in bilateral and multilateral forums. Air pollution is not just an abstract problem that treaty negotiators look for solutions for; it is something experienced by the people whose livelihoods (and health) it damages. To say that successful efforts to address transborder air pollution must involve them in some way is not a platitude, but a factual statement based on history. Without economic winners championing air pollution policy, the costs to the losers are hard to justify. I see this as good news: businesses can and do have a positive influence on environmental governance.

The roots of this project extend to my experience as a master's student in the Department of Political Science at the University of Utah. In this intellectually stimulating environment, I learned from enriching discussions with my fellow students, namely, Mark Bean, Robert Forbis, Paul Hartzog, Saban Kardas, and many others. I also benefitted from my coursework at Utah, and wish to thank the following faculty members for their mentorship: Matthew Burbank, Radoslav Dimitrov, John Francis, James Gosling, Jeff Kentor, Howard Lehmann, and Ken Smith. As it turns out, Dr. Dimitrov's course, "Global Environmental Politics," was the most important and influential one in which I had the good fortune to participate. I am grateful for the care he put into preparing it and advising me. When I handed my in paper for the course, he commented in response, firmly, that I should prioritize empirical accounts over theoretical exercises. That stuck with me.

Parts of Chapter 4 have appeared in the *Journal of Urban History* and parts of Chapter 6 have appeared in the *Journal of Integrative Environmental Sciences*. Material from these articles is included here with permission.

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List of Acronyms

AAM	Alliance for American Manufacturing
AC	Adirondack Council
ACR	Adirondack Club and Resort
ADCA	New York State Acid Deposition Control Act
APCB	Toronto Air Pollution Control Board
APCD	Los Angeles County Air Pollution Control District
AQA	Canada-United States Air Quality Agreement
AQC	Air Quality Committee
BAT	best available technology
BRCG	Bilateral Research Consultation Group on the Long-Range Transport of Air Pollutants
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CalNex	California Nexus
CARB	California Air Resources Board
CCAR	Canadian Coalition on Acid Rain
CCME	Canadian Council of Ministers of the Environment
CCPP	Connors Creek Power Plant
CFCs	chlorofluorocarbons
CMA	Canadian Manufacturers Association
Consolidated	Consolidated Mining and Smelting Company
CPA	Citizens' Protective Association
CSAPR	Cross-State Air Pollution Rule
EANET	Acid Deposition Monitoring Network in East Asia
ECARP	Eastern Canada Acid Rain Program
EDF	Environmental Defense Fund
EMEP	European Monitoring and Evaluation Programme
EPA	United States Environmental Protection Association
EPB	New York State Environmental Protection Bureau
EPL	Environmental Planning Lobby
GHGs	greenhouse gases
Globe	The Globe and Mail
IAQAB	International Air Quality Advisory Board
ICARTT	International Consortium for Atmospheric Research on Transport and Transformation
IJC	International Joint Commission
IR	international relations
LCP	Lakeshore Capacity Project
LILCO	Long Island Lighting Company
LRTAP	Convention on Long-Range Transboundary Air Pollution
MDEQ	Michigan Department of Environmental Quality
MOE	Ontario Ministry of Environment
MOI	Canada-United States Memorandum of Intent concerning Transboundary Air Pollution

MPSC	Michigan Public Service Commission
MTCC	Metropolitan Toronto Civic Conference
MVPCA	United States Motor Vehicle Pollution Control Act
MVPCB	California Motor Vehicle Pollution Control Board
NAAQS	National Ambient Air Quality Standards
NAPAP	National Acid Precipitation Assessment Program
NASA	National Aeronautics and Space Administration
NESCAUM	Northeast States for Coordinated Air Use Management
NLC	norm life cycle
NMHC	non-methane hydrocarbon
NOAA	National Oceanic and Atmospheric Administration
NSPS	New Source Performance Standards
NSR	New Source Review
NYSAG	New York State Attorney General
NYSDEC	New York Department of Environmental Conservation
NYSERDA	New York State Energy Research and Development Authority
NYSPPSC	New York State Public Service Commission
OECD	Organisation for Economic Co-operation and Development
OPG	Ontario Power Generation
OTAG	Ozone Transport Assessment Group
OTC	Ozone Transport Commission
PADEX	Pacific Dust Experiment
PM	particulate matter
POPs	persistent organic pollutants
PSD	Prevention of Significant Deterioration
RAIR	Relative Annual Intercontinental Response
RVP	Reid Vapor Pressure
SCR	Selective Catalytic Reduction
SCS	Supplemental Control System
SES	Sudbury Environmental Study
SFC	Smelter Fumes Committee
SIP	State Implementation Plan
SOS	Stamp Out Smog
Star	The Toronto (Daily) Star
TF HTAP	Task Force on Hemispheric Transport of Air Pollution
Times	Los Angeles Times
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environmental Programme
US Chamber	U.S. Chamber of Commerce
USBM	United States Bureau of Mines
USDA	United States Department of Agriculture
WMO	World Meteorological Organization

Chapter 1: Introduction

It appears obvious to the scholar of environmental politics, and perhaps even to the casual observer, that the types of airborne pollutants regulated, and the ways they are regulated, have changed substantially over the past fifty or more years. After all, environmental departments in federal, provincial, and state governments came into existence around the first few years of the 1970s; urban areas are clearly cleaner than in the past; science has taught us about new problems caused by the chemicals that transportation and industrial activity release into the air; the policy-relevant sciences have developed novel regulatory mechanisms (e.g., emissions trading); environmental non-governmental organizations have professionalized; air pollution statutes have been enacted; and international treaties, created. Not surprisingly, numerous studies have traced these developments, either identifying one or more as novel and engaging in an in-depth analysis of them, or examining how they define and structure demarcated time periods in the broader history and evolution of environmental governance (Bernstein 2001; Fiorino 2006; Macdonald 2007; Skogstad 1996; Wilson 2002; A. Jordan, Wurzel, and Zito 2003). Despite these changes, many of which are uncontested and significant, the purpose of this dissertation rests instead in highlighting the importance of a persistently crucial factor in successful air pollution governance, namely, the participation in the policy process by property-based interests who benefit economically from clean air policy. Change is then examined in terms of how this continuity is expressed over time.

Although businesses are often vilified for contributing to air pollution and seeking to prevent regulations, many actually benefit economically from clean air. These

property-based interests—often taking the form of local or regional growth coalitions, property owners’ associations, and urban newspapers—pursue air pollution abatement in their region because they are spatially bound. Clean air is necessary for them to pursue their economic activities, to generate profit from the use and sale of their property and, as well, to benefit from the use of their property in other ways. These property-based interests do not typically get everything they want policy-wise, as industrial interests with opposing goals are effective lobbyists as well, but at least they raise the issue and provide the political will for a policy outcome that often results in cleaner air. At the same time, how they do this has changed over time as different types of air pollution have become known, laws have changed through legislative acts and court decisions, and economic development has caused pollution to arrive from places it did not travel from in the past.

This dissertation seeks to provide an account of continuity and change in the role played by property-based interests in Canada and the United States, beginning as far back as the late 1920s and continuing nearly to the present. In doing so, it examines four “regimes” of air pollution governance: (1) the American domestic regime, (2) the Canadian domestic regime, (3) the Canada-US bilateral regime, and (4) the multilateral air pollution regime in which both countries participate. Not all of these are examined as far back as the 1920s, and not all of them are taken to the present. That is a matter of case study selection within these regimes, and is discussed later in the chapter.

Furthermore, this dissertation discusses the politics of the types of air pollution that have been the subject of the most political contestation for the past several generations—particulate matter and those related to photochemical smog and acid deposition. Carbon dioxide and chlorofluorocarbons, while damaging and politically

salient pollutants as well, are not specifically discussed in this study (except during the instances when they happened to overlap for regulatory purposes). Particulate matter and photochemical smog reduce urban visibility, dirty buildings, and lead to increased incidence of cancer and heart disease. Acid deposition damages architecture, plant life, and aquatic ecosystems. A range of activities related to the burning of fossil fuel causes them, most notably (but not limited to) the use of automobiles, and point sources such as power plants, smelters, and steel mills. In major urban areas following World War II, garbage incineration and the use of coal by commercial transportation were sizeable contributors too. While air pollution emissions have declined substantially in Canada and the United States during the past forty years, many parts of North America still suffer from elevated levels. In addition, rapidly industrializing countries in Asia are sending an increased amount of pollution to North America over the Pacific. Tighter controls in Canada and the United States, coupled with more emissions from abroad, mean that the nature of the air pollution problem is changing. On top of what is produced at home, foreign pollution will increasingly become a health and political issue for the foreseeable future.

As air pollution affects the well-being of Canadians and Americans, it is important to understand how policy is made and the conditions under which it is effective in this most nebulous of issue areas. In casting a wide net—both spatially and temporally—this dissertation aims to contribute to one small part of the puzzle by clarifying and explicating the roles performed by some key actors in the policy process.

1. Existing Scholarship on Air Pollution Politics and Policy

The scholarly literature on air pollution governance is highly fragmented, as it has been generated by scholars from several different fields and subfields, often with concerns specific to that field. Given this diffusion and fragmentation, and that this research project examines the politics of air pollution in a historical manner that is confined to Canada and the United States, this section reviews the existing relevant literature discussing air pollution in North America (yet excluding Mexico) within the academic fields of political science and history. Some sources on acid rain in Europe are referred to, as are a few sources outside of the disciplinary boundaries of history and political science, but this is done sparingly and when deemed appropriate due to the significance of the book or article.

Relatively independent pockets have developed on the topics of pre-WWII rural pollution, post-WWII urban pollution, federal negotiations and statute making, state and provincial programs, interstate relations and, for a time, the particularly popular issue of acid rain. Much of this analysis tends to focus on one of these, rather than exploring the connections among them. Furthermore, much more of the literature on air pollution governance is not written specifically about the topic; rather, it uses air pollution as one of many examples of the type of governance the analyst is studying for the purpose of establishing a broader theoretical point about environmental governance or some other issue in political science.

This political science literature lagged temporally behind the natural science literature on air pollution chemistry, its effects, and the geological conditions that caused

certain areas to be more severely affected, by decades.¹ Among the few early scholarly sources is an article by J. B. Sanderson (1961) on the politics of the British Clean Air Act of 1956. Sanderson explores the role of the National Smoke Abatement Society, a pressure group, in pushing for clean air legislation through the release of publications, contact with the press, public lectures, exhibitions, and several other means. He shows how it became more relevant after the London Smog of 1952, having established itself as a forum for policy development by the time air pollution control became politically popular. Sanderson's article occurred in relative isolation and, by the late 1960s, among the only scholarly sources of air pollution politics in North America was an article on California smog politics written by Gladwin Hill (1968a), a career *New York Times* reporter in the Los Angeles bureau who had written about the topic as a journalist for two decades.

As American political science scholars began to engage with the topic, their analyses reflected the popular theoretical approaches of the time. In one provocative early study, Matthew Crenson (1971) explored the “un-politics” of air pollution using an approach focused on industrial dominance in the policy process. Engaging with the then-prominent pluralist approach to the study of American politics, Crenson is interested in highlighting the conditions in which a potential issue fails to enter the pluralistic policy process in the first place. In a comparison of two case studies—Gary, Indiana, and East Chicago—Crenson shows how the configuration of power among political parties and

¹ Commenting on the relative paucity of social science accounts of air pollution, E. Melanie Dupuis (2004, 1) says that “the air pollution studies that gain and dominate policymakers’ attention today have laid out the problem, and its solution, in terms of models and prices, that important but incomplete information that comes from quantitative assessments and markets.”

businesses determined whether air pollution became problematized to begin with. As East Chicago was not dominated by a single industry or political party, but rather exhibited a diffuse distribution of power, it aggressively addressed the issue. Gary, Indiana, on the other hand, consisted of a steel-based economy and a lack of political competition. Here, the steel industry was able to prevent the problem of air pollution from becoming politically salient—and thus subject to negotiation and mutual accommodation between competing interests.²

Later, as air pollution rose on the American public issue agenda around 1970, one of the earliest studies of the issue-area focused on Americans' interest in it and willingness to bear higher costs to address it (Erskine 1972). Among the first studies of the politics of federal air pollution statutes was research conducted by Charles O. Jones (Jones 1972; Jones 1974; Jones 1978). His research traced the history of the federal legislative negotiations and offered an explanation of the policy developments of the late 1950s to the early 1970s. Using Charles Lindblom's policy incrementalism approach, Jones based his analysis on rising public interest in air pollution, the effectiveness of the government department tasked with implementing the statutes in gaining political allies, and on the department's struggle to develop the expertise necessary to implement the laws at the rate they were passed. His papers and book on the topic represent one of the most thorough secondary sources of the initial federal politics of air pollution.

Another influential book, published around the same time, is James Krier and Edmund Ursin's (1977) book on California's policy response to motor vehicle air pollution. Here, the authors examine, in considerable depth, the problem and response to

² For discussions of the significance of Crenson's book, see Crocker (1973), Grant (2002), and Lezama (2004).

air pollution by Los Angeles and, later, California, focusing on the competing business interests and the politicians mediating between them. They also discuss California's role in the development of the federal air pollution response, from the earliest legislation, in the 1950s, through the middle of the 1970s. Using contemporary interviews, this source contains information not available anywhere else. Virtually every subsequent text containing a case study of California air pollution policy or early federal air pollution cites this book heavily.

Following this modest initial scholarly response to American federal policymaking for air pollution, the acid rain issue was responded to by academia independently of these earlier studies. As with the literature on urban smog, political science literature on acid rain lagged temporally by more than a decade and, compared to the research conducted in the natural sciences, in the quantity of papers published. To focus on Canada-US relations, the earliest publications were by Jurgen Schmandt and Hilliard Roderick, who edited a book on the topic, and Don Munton, who made a veritable cottage industry of the topic for over two decades. Schmandt and Roderick's (1985) book explored the emerging issue from many angles, including overviews of the problem from policy and natural science perspectives (Schmandt, Roderick, and Morriss 1985; DeRidder 1985); Canada-US bilateral negotiations (Stewart and Wilshusen 1985); supporting international institutions (in particular, the International Joint Commission [IJC]) (Kinscherff 1985; Homer 1985; Morriss 1985); and the domestic policy response in both Canada and the United States (Egel 1985; Albin and Paulson 1985; Britton, Albin, and Paulson 1985). Collectively, the chapters in this book provide perhaps the first scholarly accounts of the domestic and bilateral politics of acid rain in Canada and

the United States. Munton's acid rain publications discuss the emergence of the issue and the environmentally-dependent nature of Canada in relation to the United States (Munton 1980; Munton 1981), the development and use of acid deposition science (Munton 2004), the media response to the issue (Munton, Fenech, and Keating 1995), the American acid rain program (Munton 1998), and the negotiations for and implementation of the Canada-US Air Quality Agreement (AQA) (Munton 1997; Munton et al. 1999; Munton 2007).

Many other scholarly publications on acid rain followed the emergence of the issue and political response to it. G. Bruce Doern and Thomas Conway (1994) published a book chapter on Canadian acid rain policy, and Douglas MacDonald's (1997) doctoral thesis provided an account of the negotiations between the Ontario Ministry of the Environment and the province's polluting industrial sources, leading to Ontario's acid rain program. Apart from the book chapters and article listed above, surprisingly little was written about the issue on the American side. Perhaps the most significant early book responding to the issue was James Regan and Robert Rycroft's (1988) *The Acid Rain Controversy*, which discussed the emergence of the issue, the science, potential control technologies, and the politics of acid rain and prospects for policymaking (see also Regens 1985). Another similarly exploratory book was authored by Bruce Forster (1993). As with the edited book by Schmandt and Roderick, and Regan and Rycroft's book, Forster's utilizes a shotgun approach to discussing the various issues relevant to acid rain policy. In it, he discusses the science, control technologies, and the interest groups opposed to control measures.

After the American Acid Rain Program was created under the 1990 Clean Air Act Amendments (CAAA), a couple of studies provided an overview of the politics leading to the statute and its implementation. The most extensive account of the creation of the 1990 CAAA is offered by Gary Bryner's (1995) *Blue Skies, Green Politics*, as it discusses not only Congressional politics and negotiations among the major participants in the policy process, but also the structure of the statute and rulemaking under it. The other notable source of the politics leading to, and the implementation of, the 1990 CAAA (in particular, the sulfur dioxide emissions trading program) is *Markets for Clean Air* by A. Denny Ellerman and colleagues (2000). This book's primary concern is an assessment of the effectiveness of the 1990 CAAA's Acid Rain Program, but its chapter on the legislative history of the program is among the most detailed scholarly sources available on the topic.

Although the main geographical source of concern over acid rain in the United States is the Northeast and, in particular, the Adirondack Park, very little politics or law literature has been produced on this topic. Notable exceptions include the participants in a special issue of *Environmental Science and Policy* (Randorf 1998; Pouyat 1998; Nordenstam et al. 1998; P. J. Miller 1998; Kraft 1998), and an article, written by a former director of the Adirondack Council, providing a legislative history of the acid rain in New York (Melewski 2002).

Among the noteworthy books about acid rain politics outside of North America is Sonja Boehmer-Christiansen and Jim Skea's (1991) *Acid Politics*, covering the politics of the issue in England and Germany, two of Europe's largest contributors to the problem. This comparative politics study discusses the institutional and cultural differences

between the countries and how these differences affected the countries' response to and understanding of the problem. Maartin Hajer's (1997) famous study of the acid rain politics of England and the Netherlands is discussed more in Chapter 2 of this dissertation. Suffice to say here, it provides an in-depth account of the politics that occurred in each of these countries, focusing on how the issue was discursively framed. Finally, Kenneth Wilkening's (2004) book on acid rain politics and science as it developed in Japan underscores the cultural dimension to how science is understood and translated into policy.³

As the political science discipline was beginning to develop a modest literature on the politics of air pollution, historical studies began to appear which covered some of the empirical topics political science had missed or not discussed sufficiently. However, there have been surprisingly few historical studies on urban and rural air pollution. In fact, the journal *Environmental History* appears to contain only one article on urban smog in all of its archives. Yet a few notable studies have taken place. Perhaps the most significant is John Wirth's (1999) extensive account of the Trail Smelter Dispute. *In Smelter Smoke In North America: The Politics of Transborder Air Pollution*, Wirth covers case studies on the Mexican-American and the Canadian-American border.⁴ The latter discusses the conflict between American farmers in Washington and a Canadian smelter in British Columbia, detailing the role of scientific research and bilateral diplomacy in bringing the matter to a resolution. Other recent studies have also examined this case study historically (see Allum 1995; Allum 2006; Knox 2006). Furthermore, the aforementioned *Environmental History* article examines the role of a

³ For a more in-depth overview of Wilkening's book, see Temby (2007).

⁴ See Day (2001) for a discussion of the merits of Wirth's book.

local chamber of commerce in Salt Lake City in bringing about air pollution reforms (Moore 2007). As with Wirth's analysis, Ted Moore's article underscores the importance of property owners in pushing for smog abatement.

Scott Hamilton Dewey's (1998; 2000) study of American air pollution politics between 1945 and 1970 provides in-depth accounts of how the issue was responded to politically in Los Angeles, New York City, and Central Florida. While the Los Angeles/California case study draws heavily on Krier and Ursin's (1977) research, the New York City and Central Florida case studies appear to be discussed here, in this way, for the first time. Focusing on urban pollution, Dewey's analysis underscores the role that competing business interests play in formulating and providing the political will to address the issue. A more recent book about air pollution politics in Los Angeles, by Chip Jacobs and William Kelly (2008), covers much of the same subject matter as Dewey's and Krier and Ursin's books, but brings it to the present. In addition, a recent edited book on air pollution politics and history contains chapters on air politics and policy in Los Angeles (Dunsby 2004), Pittsburg (Gugliotta 2004), cities in England (Brimblecombe 2004; Platt 2004; Osborne 2004; DuPuis 2004), and Germany (Uekoetter 2004).

Furthermore, recent literature in political science (or law) has used historical air pollution case studies to illustrate or provide evidence for theoretical arguments. Studies in both Canada and the United States have assessed the efficacy of common law in addressing air pollution. Articles by Jennifer Nedelsky (1981) and Donald Dewees and Michael Halewood (1992) examine case studies of pre-WWII pollution from Ontario smelters in these terms. Noga Morag-Levine (2003) traces the history of air pollution

regulation from fifteenth-century English nuisance law through the 1970 US Clean Air Act (CAA), showing how current regulatory principles are a continuation of those used throughout common law air pollution regulation's historical lineage. She explains that common law countries have always used risk-based regulation rather than the technology-based regulation used by Germany and other European civil law countries. The Trail Smelter Dispute, as well, has been examined in terms of its relevance to modern jurisprudence (Handl 2006; Parrish 2006; Kaye 2006; Hestermeyer 2006) and international politics (R. A. Miller 2006; Okowa 2006).

George Gonzalez's research, discussed further in Chapters 2 and 3 of this dissertation, has explored the role of corporations and economic elites in air pollution governance. One of his books provides an account of the influence of American manufacturers in the development of the 1990 CAAA, while another develops a theory about the importance of local economic elites in urban pollution control (Gonzalez 2001; Gonzalez 2005). He further argues that environmental pressure groups are allowed to participate in the policymaking process in order to lend the elite-driven process a degree of legitimacy. In a similar vein, Matthew Cahn (1995) focuses on the symbolic nature of air pollution laws to argue that federal clean air policy is effective at deceiving the public into thinking that the problem is being addressed rather than actually doing much to improve air quality.

In a recent study of post-1990 CAAA American environmental policy, Christopher McGrory Klyza and David Sousa (2008) illustrate that, in the United States' current state of Congressional gridlock, air pollution policy has found alternative forms of development—through the means available within existing statutory law. They show

that, in the absence of new air pollution statutes, the CAA has evolved through the use of riders on spending bills, through federal rulemaking and, most importantly, through litigation.

In addition to, and independent of, this recent scholarship on American air pollution politics and policy, Canadian policy and politics scholarship dealing with contemporary events related to air pollution has approached the issue from the angle of disentangling the role of the provinces versus the federal government (see Skogstad 1996; K. Harrison 1996; K. Harrison 2002).⁵ The most notable is Debora VanNijnatten's (VanNijnatten and Lambright 2002; 2003; 2009) work, which has focused on Canadian policy for ground-level ozone. Her research has examined this in relation to the more aggressive American policy, as well as how it relates to the negotiations over the 2000 Ozone Annex to the Canada-US AQA. Her work has tended to center narrowly on the importance of formal governmental institutions and government officials rather than provide a broader account of the diverse interests.

Lastly, in the political science subfield of international relations (IR), few studies have focused on air pollutants other than chlorofluorocarbons and carbon dioxide. It appears that the first international-themed article on air pollution as a global issue was written by Abel Wolman (1968) and published in the periodical, *Foreign Affairs*. In it, Wolman editorializes on the need for leadership in the creation of arrangements to prevent the global spread of airborne pollutants. After the creation of LRTAP in 1979 and the subsequent protocols during the second half of the 1980s and throughout the

⁵ An exception is David Boyd's (2003) book, *Unnatural Law*, which provides more of a general overview of air pollution governance in Canada, especially with respect to its governing institutions and federal statutes.

1990s, a few studies were published providing an overview of the regime and assessing its effectiveness (see Levy 1995; Wettestad 1997; Munton et al. 1999). In addition, IR scholars interested in the role that science performs in international environmental cooperation have used LRTAP as a case study (see Lidskog and Sundqvist 2002; Dimitrov 2005). These science-based approaches are discussed in Chapter 2; for now, it is sufficient to say that the existing scholarly literature on global air pollution (not including CFCs and carbon dioxide) focuses almost entirely on European politics and regime participation, with little or no mention of Canada or the United States.

Perhaps the IR source most ostensibly relevant to this dissertation is Elizabeth Desombre's *Domestic Sources of International Environmental Policy*, which contains a chapter on the United States' internationalization of its air pollution regime (see DeSombre 2000, 81–105). However, in this chapter, Desombre quickly dispenses with the idea that the 1990 CAAA has been internationalized, and instead directs her attention to the United States' role in the development of the Montreal Protocol on stratospheric ozone depletion.

2. Contribution of Dissertation

With the scholarly literature on air pollution governance as fragmented as it is—consisting of different theoretical approaches and empirical areas of research—there are plenty of gaps to fill. Some of these gaps exist because important instances of air pollution politics and policy have not been studied. There are no scholarly accounts of early efforts to address urban air pollution in Canada. Similarly, although trans-Pacific air pollution is arguably an emerging issue for North America, the politics of this, and the

policy developments that have thus far occurred, have not been discussed in the scholarly literature.

The most significant gap, however, results from an absence of a comparative-historical analysis of how governance efforts across space—represented by different countries or different levels of governance within and between these countries—relate to one another, and how this relates to what has occurred over time. Without spatial comparisons, similarities between experiences in different places that deal with the problem of air pollution tend to go unnoticed. It is possible that individual case studies place emphasis on explanatory factors that a comparison would reveal as less important than the persistent features common across case studies. Wirth's (1999) analysis of air pollution governance on the Canadian-US border and Mexican-US border, Crenson's (1971) study of pollution in Gary and East Chicago, and Gonzalez's (2005) study of Los Angeles and Chicago are a beginning, but more research is required to determine the kinds of continuity and change that occur across these cases. Furthermore, as studies on acid rain have tended to focus on Ontario's program, the American federal program, and the negotiations between Ottawa and Washington over the issue, the source of the political will to address the problem in the United States has been neglected. Perhaps the acid rain politics of Ontario and New York share something in common? If so, what? Also, what has been the relative influence of these jurisdictions affected by acid rain? Both New York and Ontario politicians and property-based interest groups sought an American national acid rain program, which finally occurred. The Canadians also wanted an acid rain treaty and got it. Since then, both the American air pollution regime and the Canada-US bilateral regime have evolved through a variety of means. Yet it is

not entirely clear which have been the most important in improving air quality, and who has been involved in their evolution. Understanding this is important because it not only illustrates the relative significance of the American and Canada-US bilateral regimes, but also identifies the key political actors and how the regions for which acid rain damage was politicized—namely, the Muskoka District and the Adirondack Park—were able to achieve influence. Given that the domestic politics of acid rain in both regions are relevant to the Canada-US bilateral politics and American federal politics, a rich understanding of the latter presupposes an examination of the former. Furthermore, as both countries participate in the multilateral LRTAP regime, initially designed to address acid rain and, later, other types of air pollution, the role of Canada and the United States in this regime should be explored.

Apart from the need for these cross-regime comparisons, the study of air pollution is also suffering from a lack of temporal comparisons. Debra VanNijnatten's (2002; 2003) research on Canadian smog policy, while benefiting from being comparative in nature, highlighting domestic processes that affect Canada-US bilateral relations on smog policy, is restricted to a relatively short (10-15 year) time period.⁶ Don Munton's (1997;

⁶ VanNijnatten's work on Canada-US bilateral smog negotiations also contains at least one minor factual error. Namely, she claims that negotiations for the 2000 Ozone Annex to the Canada-US Air Quality Agreement were "in many aspects . . . a reprise of the acid rain negotiations of the 1980s" since the Canadian federal government pressured Ontario to reduce the emissions of nitrogen oxides with the goal of obtaining more bargaining power in convincing the United States to make reductions from power plants in the US Midwest (VanNijnatten 2009, 101). In fact, as discussed in Chapter 5, the US program for nitrogen oxide reductions from the Midwest and other regions (consisting notably of the 1998 NO_x SIP Call and the litigation over new source review) was already underway by 1999, and it was the relatively modest Ontario reduction commitments, obtained through the installation of selective catalytic reduction units on the province's coal-fired power plants, that enabled the Ozone Annex to be created.

2004) investigation of Canada-US negotiations for the 1991 Canada-United States AQA is also quite informative in its consideration of domestic-bilateral links, yet is limited, for the most part, to a period beginning in the late 1970s and ending in the mid-1990s. Without comparisons over time, studies of air pollution governance in one era may overstate the importance of new developments that are not new at all, but rather persistent features of how air pollution is addressed. Related to this, studies confined to a short time period may conceptualize these features inappropriately, defining them too narrowly or broadly. For example, recent studies of Canadian environmental policy, pointing to the Accelerated Reduction/Elimination of Toxics (ARET) Challenge program, argue that voluntarism is a new feature of Canadian environmental governance (Lombard 1999; Thomas 2003; Winfield 2009). Daniel Fiorino (2006) argues that American environmental governance has begun to exhibit reflexive governance more than the old-fashioned command-and-control governance of the 1970s. However, it is possible that an historical analysis will reveal that voluntarism and reflexivity are persistent features of air pollution governance.⁷ If so, the research question could shift from how the change to voluntarism occurred to what the general conditions are that have made voluntarism a persistent feature of air pollution governance over time. Similarly, a temporal comparison may reveal that certain types of actors have been influential over time and

⁷ Obviously certain types of reflexive arrangements (such as emissions trading) are recent developments. However, as Emmett Lombard (1999, 4) suggests, voluntary arrangements are inherently reflexive since “The voluntary model of environmental controls encourages greater private sector flexibility in meeting goals and hastens the movement away from government-derived standards and government-mandated control technologies.” This is not to downplay the difference between a trading system with a fixed cap, and the reliance on voluntary reductions from industry (with no fixed pollution cap), but instead to underscore that these are both flexible alternatives to the mandated imposition of specific abatement technology.

within different regimes, or that the politics of air pollution abatement exhibits patterns of interest group influence which have persisted. Some influential pressure groups that are now understood as environmental groups may have more in common with specific types of pre-environmental movement groups than other contemporary environmental groups. If so, the recognition of which types of groups these are, and how they have exercised influence over time, may contribute to our understanding of how air pollution policy is negotiated and formulated. Thus, insofar as air pollution governance exhibits specific persistent features, this continuity can provide a dimension by which to examine change—change in how the continuity finds expression. For example, if property-based interests are an important source of the political will to address air pollution, change in air pollution governance can potentially be examined in terms of (a) the means through which these actors have historically exercised influence, (b) who counts as one of these actors, and (c) the types of air pollution problems they have sought to address.

Yet few of the existing studies of air pollution governance have examined the phenomenon over a period of several generations. And of the ones that have—Wilkening's (2004) study of acid rain in Japan and Jacobs and Kelly's (2008) study of smog in Los Angeles—all have been confined to specific narrow region. Klyza and Sousa's (2008) research has yielded particularly enlightening insights about how American environmental policy has changed, but the period covered is under twenty years and the substantive focus is not specific to air pollution.

Furthermore, with the exception of Crenson's early study, few others have sought to determine the factors that lead to failed governance. A comparative analysis of multiple instances of air pollution governance—some successful and some not—can

yield insights into what factors cause air pollution problems to remain unresolved, or specific efforts to be derailed into ineffective arrangements.

This dissertation seeks to make a contribution toward filling these gaps by providing a broad account of continuity and change in air pollution governance in Canada and the United States. The analysis is centered on the following research objectives:

1. Explore the role of property-based interests in the policy process for air pollution governance in Canada and the United States.
2. Discuss how the following have changed over time and space: (a) who comprises property-based interests, and (b) what their avenues of influence are in air pollution governance.
3. Given the engagement of property-based interests in the policy process for clean air policy, another goal is to determine what conditions lead to variation in the success (or failure) of governance.

The means through which this dissertation aims to achieve these objectives is discussed below.

3. Approach of this Dissertation

This dissertation employs a comparative-historical research design to examine the evolution of, links between, and role of property-based interests in, the four regimes of air pollution governance mentioned above. This section, on the approach taken to study this phenomenon, first defines the main concepts employed throughout, next discusses methodology (including research design, case study selection, and data sources), and then describes the organization of the dissertation.

3.1. Conceptualization

Here the key concepts for the dissertation are defined: political will, regime, substantive governance and regime effectiveness, property-based interest, industrial interest, ecological modernization, and air pollution. The terms *political incentive* and *political will* are used interchangeably in this study. Political will was coined by business management scholar Henry Mintzberg (1983) and has been the subject of subsequent literature aimed at defining and operationalizing it (Brinkerhoff 2000; Treadway et al. 2005). The analysis contained herein will use Post and colleagues' (2010, 659) definition of political will: "the extent of committed support among key decision makers for a particular policy solution to a particular problem." As the authors highlight, this definition contains four components. First, it presupposes "A sufficient set of decision makers" to support a policy (Post, Raile, and Raile 2010, 660). Not only do the property interests need to be organized to influence policy, but they must be involved in its implementation. Political will cannot be a "one man show." Second, political will requires that supporters of a policy position have "a common understanding of a particular problem on the formal agenda." This enables them to communicate and develop strategies to address the problem. Third, the political actors must be "committed to supporting" their positions; that is, they must have credibility that they take their positions seriously at the cost of their reputation (Post, Raile, and Raile 2010, 660). Fourth, there needs to be "A commonly perceived, potentially effective policy solution." Political will consists of more than simply pressuring the government to resolve a problem; it involves policy formulation.

The primary units of analysis in this research project are air pollution *regimes*. The concept of the regime is central for much international relations (IR) theory—so much so that Kenneth Wilkening (2004) has stated that the regime is an IR concept exclusively. Existing definitions range from very general to very specific. Nicholas Onuf (1998, 145), for example, defines a regime as “any bounded sets of rules or practices,” while Dimitrov (2005, 5) defines it as “a formal intergovernmental policy agreement that involves specific commitments to policy targets and timetables and has entered into force according to the terms of the legal text.” The most popular definition of regime in the IR literature is that it is “sets of implicit or explicit principles, norms, rules, and decision-making procedures around which actors’ expectations converge in a given area of international relations” (Krasner 1983, 2). Yet there is no reason why this concept must be confined to IR. After all, governing arrangements for air pollution are nearly as ubiquitous as air pollution itself, existing at every level of government in one form or another. Furthermore, in a recent study of the legal underpinnings of the CAA, Noga Morag-Levine (2003) refers to the United States’ air pollution regimes as if she were taking the concept for granted. For the sake of consistency with IR theory, this dissertation uses Krasner’s definition, yet without its explicit reference to IR. These “sets of implicit or explicit principles, norms, rules, and decision-making procedures around which actors’ expectations converge in a given area” are not within the exclusive domain of IR; rather, they describe governance in general. As is shown throughout the case studies in Chapters 3 through 6, a considerable amount of diversity has existed within air pollution governance in North America as it has developed over time. This diversity reflects the historical and jurisdictional contingencies of how the issue has been dealt

with, and to not give it a single conceptual label would exclude *a priori* comparisons among them.

It must also be noted that regimes can be interconnected to greater or lesser degrees, and can exhibit rapid changes in the form of statute or treaty creation. To provide one example of the latter, the operating regime (for the Trail Smelter) resulting from the Trail Smelter Dispute was “an ad-hoc arrangement outside the IJC jurisdiction,” yet still served as a precedent for future conflict resolution (Caldwell 1992, 25). The Canada-US AQA replaced this precedent and the principles it represented, and thus can be understood as another stage in the development of the bilateral air pollution regime.

The terms *substantive governance* and *regime effectiveness* are used interchangeably throughout this dissertation. Because the analysis seeks to apply the same broad criteria of effectiveness to the diverse set of case studies this research project examines, it will draw on the IR regime theory literature for a definition of these terms. Young and Levy (1999) conceptualize regime effectiveness in terms of two dimensions: (1) the extent to which it solves the problem that it was designed to address, and (2) the extent to which the regime alters the behavior of actors and institutions in a way that contributes to the positive management of the targeted problem. Assessing regime effectiveness is complicated by the fact that the reduction of a problem, or the actions of individuals to address it, are not themselves evidence of regime effectiveness. This is because, as Young and Levy (1999, 4) put it, “most problems serious enough to justify the creation of an international regime motivate actors to pursue solutions through a variety of initiatives, including some that do not involve the regime directly. What looks like an effective regime, measured in terms of problem solving, might merely be an

irrelevant sideshow.” In other words, it is possible that what appears to be evidence of substantive governance would have occurred or was already taking place without it. This is especially the case with international commitments, which are often only agreed to when the signees are already on track due to their own domestic regimes. Thus, if not initially, effective regimes must eventually develop a direction of their own somewhat independent of the other domestic and international regimes for the same issue area. This means that regimes may be more effective at one period than another, necessitating the examination of regime dynamics over time.

In their edited book on the topic, Young and Levy are particularly interested in what affects the differences in the effectiveness of environmental regimes, and argue that “only by investigating the sources of behavior can we specify the conditions under which regimes are likely to prove effective” (Young and Levy 1999, 3). Is successful air pollution governance guided by the ideology and preferences of legislators, bureaucrats, and negotiators; by politicians attuned to public opinion and civil society lobbying, or is it led by business interests with a stake in clean air? The authors argue that developing regimes give some actors “new ammunition to use in their dealings with others” (Young and Levy 1999, 26). For this research project, this implies that even if property-based interests were not important in the creation of the CAA, for example, the fact that they utilize it to bring about their policy objectives, and are successful in doing so, suggests the statute serves as the constitutive basis for an effective regime and substantive air pollution governance. In other words, the CAA-based American air pollution regime consists of rules—“ammunition ”— that are utilized by actors in pursuing their objective of air pollution abatement, regardless of whether they were involved in its creation.

Therefore, on the basis of Young and Levy's (1999) recommendations, in assessing whether an air pollution regime is effective, this research project examines whether it brought about an improvement in the problem it was designed to address and whether it was used by interested actors to resolve the air concerns about air pollution. When a problem existed, what institution did the political actors turn to? Were they granted access to it and did it mediate between their preferences and those of other interested actors?

An in-depth discussion of *property-based economic interests* is provided in Chapter 2. These actors are conceptualized in this research project as those seeking to profit from the use and sale of land. It is also possible that some property-based interests are motivated by the enjoyment of their property irrespective of the economic profit derived from it. Actors of this sort would be natural allies for those with an economic stake on the specific issue of air pollution abatement because they are both spatially bound and tied to their locale (for whichever reason). The spatially-bound economic interests are motivated to political action in order to encourage economic growth and the conditions for rising property values. This is not necessarily growth without constraints; tourist organizations and chambers of commerce in areas economically dependent on tourism tend to seek development consistent with need to attract this sort of business. Thus, resorts are built, main streets are beautified, and many of the workers are seasonal.

Following Gonzalez (2005), the analysis in this research project distinguishes property interests from health-based lobbying groups such as the American Lung Association and from non-property-based environmental groups. It should be noted that an unavoidable amount of ambiguity rests in this distinction, but it is useful for analytical

purposes nonetheless. Since the 1970s, property-based groups tend to identify themselves as environmental groups and to organize into coalitions with environmental groups.⁸ How this can happen is rather intuitive—property’s imperative is material and environmental values are ideational and socially constructed, so the latter can map onto the former so long as the environmental protection appears as a reasonable description of the activities of property. Nevertheless, it is necessary to create a set of criteria (however murky it may be) for drawing the distinction between property and non-property groups—environmental or otherwise—acknowledging that some coalitions are part environmental, part property, and work together on areas of overlapping concern. One criterion is membership. If the group is a coalition, and its members consist largely of tourist’s, property-owner’s, and sportsmen’s associations—all groups with an economic interest in preserving their investments and developing the local economy—it is considered in this analysis a property-based group. This is not to say that it cannot also be accurately labeled an environmental NGO, yet doing so arguably conflates it with other environmental NGOs which do not have a pronounced property dimension and therefore behave differently. This is especially important given that it is arguably the property and economic incentive dimension of clean air-motivated coalitions that explains their influence—not the least of which because the economic incentive justifies

⁸ Following Jenkins-Smith and Sabatier (1993, 5) coalitions are understood here as consisting “of actors from a variety of public and private institutions at all levels of government who share a set of basic beliefs (policy goals plus causal and other perceptions) and who seek to manipulate the rules, budgets, and personnel or governmental institutions in order to achieve these goals over time.” However, the analysis contained herein differs from Jenkins-Smith and Sabatier in a number of important ways, which are discussed more in Chapter 2 of this thesis. Notably, the coalitions discussed here do not include public institutions and have a formal organization and title.

the expense of economic resources to address the problem and tends to mobilize powerful allies such as urban newspapers and land developers.

Another is location; that is, if a pressure group is located within the region on behalf of which it is lobbying for pollution relief, it is more likely to be appropriately considered a property-based (or, at least, property-influenced) group. This is not to say that the group is not also an environmental group, as many property-based groups concerned with local economic development are described by themselves and others as environmental groups. This is especially the case since the development of modern environmentalism, which has provided an evolved ideology and semantics for actors concerned with defending property against environmental threats to describe and understanding their behavior.

Also relevant is a group's board of directors. If an organization's board consists of economic elites, this is a property-based (or, at least, property-oriented) group since economic elites benefit disproportionately from economic growth and because they are potentially more politically influential. However, it is also possible that property-based groups in rural areas consist of non-elite landowners, as in the case of farmers suffering from crop damage banding together. Also, this is not to say that other environmental groups do not also have elites on their boards. Obviously the Nature Conservancy, the Sierra Club, and the World Wildlife Fund, to name a few examples, have elites on their boards and are financed partly by foundations, but these are organizations with Washington offices and nationwide or global environmental objectives, not necessarily local ones.

Furthermore, as defined, property-based economic interests are relational, depending on the source-receptor relationship between polluter and polluted. An interest group representing American businesses that claims Chinese pollution damages the American economy, or that polluting Chinese business practices should be modified, is a property-based group on that issue, even if it behaves as industry with respect to pollution that only travels within the United States.

Given that this project is particularly interested in the relationship between property and industry, it is also necessary to define what is meant by *industrial interests*. This term refers to firms, or trade associations representing them, that are more concerned with the management of the broader (non-local) economy, and are thus less concerned with the property values of any specific region. Even though “industry” is a broad classification, its activities are often polluting, placing industrial interests in opposition to property interests on clean air policy. One type of industrial interests of importance to this study are manufacturers, which are unique in that they tend to locate within urban areas since they share common benefits for doing so (Logan and Molotch 2007). Manufacturers look to urban areas as production hubs which facilitate access to materials, transportation infrastructure, professional services, and a diverse labor pool, at a minimal cost. The influence of these actors over local politics is due in no small part to the understanding that economic growth (at multiple scales) is partly dependent on their success, and thus lawmakers are inclined to take their policy prescriptions into consideration. The other type of industrial interests of importance is the heavy industry of power plants, metal smelters, and steel mills. These firms tend to locate farther from urban areas than manufacturers, yet become the basis for a local economy whose

inhabitants suffer the effects of the pollution. More importantly, pollution from these facilities travels long distances in ways that have not always been well understood. As the areas affected by the pollution emitted by these firms do not enjoy the economic benefits of local job creation, efforts to address pollution from these sources tend to be more aggressive, even as governments and property-based interests deal with the complications of proving long-distance transport and navigating trans-jurisdictional boundaries.

Ecological modernization has many diverse but related definitions in the environmental politics literature. Albert Weale (1992, 76) describes it as an ideology which “sees [environmental protection] as potential source for future growth.” He further states that “Since environmental amenity is a superior good, the demand for pollution control is likely to increase and there is therefore a considerable advantage to an economy to have the technical and production capacity to produce low polluting goods or pollution control technology.” Similarly, Steven Bernstein (2001, 17) refers to ecological modernization as “the notion that environmental problems can be solved in accordance with the workings of the main institutional arrangements of society.” For Maarten Hajer (1997, 26), it is a discourse containing three characteristics: (1) that costs and benefits of regulation can be taken into account; (2) that environmental protection is a positive-sum game; and (3) “that economic growth and the resolution of ecological problems can, in principle, be reconciled.”

Associated with this view or ideology that economic growth and environmental governance are mutually reinforcing rather than contradictory is the actual *practice* of ecological modernization. With reference to air pollution, George Gonzalez (2002, 121)

defines this as “The effort to control air pollution, and other environmental negative externalities, through the development and application of technology.” Thus, in addition to an ideology or discourse, ecological modernization can be viewed as an analytical concept with which to describe the form that policy takes. It contrasts with deeper social changes, in particular changes in consumption (such as driving fewer miles and living in smaller homes) (see Gonzalez 2009).

Lastly, this research project adheres to the common understanding of *air pollution*, as falling within the following four categories: (1) acids; (2) ground-level ozone and its precursors; (3) particulate matter; and (4) airborne toxics.⁹ Other commonly used categories include greenhouse gases (GHGs) and chlorofluorocarbons (CFCs). This project adheres to the common understanding of air pollution falling within the first four categories. Nevertheless, a considerable amount of overlap exists among the first three of these four categories, as well as CFCs and GHGs, such that efforts aimed at addressing one class of pollutants have implications for another. Acids, consisting of sulfur dioxide and nitrogen oxides, damage aquatic ecosystems, plant life, and built infrastructure through wet or dry deposition. Before the 1970s, when these chemicals became known for causing what is popularly referred to as acid rain, they were implicated in other types of pollution. Among these was smog, a loose term referring to urban pollution consisting of ground-level ozone and particulate matter. Ground-level ozone, often referred to as photochemical smog, results from a reaction of nitrogen oxides, volatile organic compounds (also known as hydrocarbons) and sunlight. Volatile

⁹ Prominent understandings of what substances air pollution consists of, as well as what counts as air pollution in the first place, have changed over the past century. Thus, any effort to define air pollution a-historically will misrepresent these historical understandings and suggest more rationality than was necessarily present.

organic compounds include a range of pollutants, among them methane and CFCs.

Unlike acid rain, ground level ozone has historically been primarily an urban problem. It is carcinogenic and causes a range of pulmonary and cardiovascular problems, although the precise nature of the health effects was not known with certainty when the early measures were taken to address it in California during the 1950s. Notably, all ozone precursors, as well as ozone itself, are GHGs.

Particulate matter is a wide range of pollution types; its concern as a label is with size. Broadly, there are two types of particulates; in order of descending size, they are: PM₁₀, and PM_{2.5}. PM₁₀ designates air pollution smaller than ten micrometers in size, while PM_{2.5} is pollution smaller than 2.5 micrometers. In general, the smaller the particulate, the further it travels and the more damaging it is for human health. Toxics are the only type of airborne pollutant that does not substantially overlap with the others. The United States Environmental Protection Agency (EPA) lists 188 chemicals falling under this label, including lead, mercury, asbestos, cadmium, benzene, and polychlorinated biphenyl (see www.epa.gov for the full list). That said, the regulation of toxics has not been as heavily politicized as other types of pollution, and thus this category of pollutants is not discussed much in what follows.

3.2. Methodology

As stated above, this dissertation utilizes a comparative-historical research design, in which the units of analysis (the four air pollution regimes) are examined both spatially (that is, comparatively) and temporally. A unit (of analysis) is “a spatially bounded phenomenon—e.g., a nation-state, revolution, political party, election, or person—observed at a single point in time or over some delimited point in time” (Gerring 2004,

342). Comprising these regimes, analytically, are individual case studies, which have been chosen for this research project. Ann Chih Lin (1998) argues that the case study methodology is best equipped to provide accounts of how variables operate in producing an outcome (i.e., causal mechanisms). Case studies are less successful at showing that a particular process or dynamic is present in other units, as other units are outside the realm of a particular case study by definition.

In isolation, each case study should provide a reasonably convincing narrative about the political role of property-based interests in the governance of that regime. However, this dissertation also seeks to show that the phenomenon outlined in each case study did not occur in a completely unique way; rather, the case studies (across time within regimes, and between regimes) should also exhibit persistent common features with respect to property-based interests. As plasticity is an ontological property of politics, we should expect to find some empirical regularities, however imperfect and temporally and spatially contingent they may be (Almond and Genco 1977). In pursuance of this objective, a comparison of the case studies underscores both the persistence of the relationship (within North America) between the involvement of property-based economic interests and substantive air pollution policy, as well as how the ways in which these interests are expressed has varied historically and across political units.

The fact that case studies are compared within and across regimes enables generalizations about air pollution governance in Canada and the United States. The temporal variation allows statements about how air pollution governance in the United States, for example, has evolved from being a issue of municipal governance to one in

which political actors in different regions compete over rulemaking through litigation. The spatial variation (between regimes) illustrates, for example, that the political will to address acid rain in Ontario and New York derives from similar sources, yet the problem has been dealt with differently due to, perhaps, institutional dissimilarities. Comparing these two regimes to the Canada-US bilateral regime yields further insights related to who the important political actors were, how successful they have been in addressing acid rain in this forum, and what constraints exist in a bilateral setting that are not present in either of the two countries' domestic regimes.

3.2.1 Case Study Selection

These regimes served as the starting point for the selection of case studies within them. The case studies represent snapshots of the air pollution politics and governance of these four regimes. In the American regime, they include: (a) Los Angeles and California smog policy during the 1950s and 1960s, (b) New York acid rain policy in the 1980s and 1990s and, related to that, (c) litigation led by New York during the 1990s and 2000s over the EPA's rulemaking under the CAA. The analysis of the Canadian regime consists of two case studies: (b) urban smog politics in Toronto during the 1950s, and (a) the acid rain politics in the 1970s and 1980s resulting in Ontario's Countdown Acid Rain.

In the Canada-US bilateral regime the two most important instances of bilateral air pollution governance are examined: (a) the Trail Smelter Dispute of the 1920s and 1930s, and (b) the acid rain issue resulting in the Canada-United States AQA and the politics of its subsequent 2000 Ozone Annex. In addition, to illustrate the implementation of the AQA, a case study of the Connors Creek dispute—occurring when

Detroit Edison restarted a mothballed power plant in the Detroit-Windsor area during 1998 and 1999—is examined.

The multilateral regime that Canada and the United States participate in is the Convention on Long-Range Transboundary Air Pollution (LRTAP) and its protocols. The case study examined here is the emerging political and scientific issue of trans-Pacific air pollution which, since the late 1990s, has been a research priority under LRTAP.

The “usual suspects” were easy choices, as a credible overview of air pollution governance among these four regimes could not avoid case studies on the Trail Smelter Dispute, California automobile regulation during the 1950s and 1960s, acid rain in both Ontario and New York, the Canada-United States AQA, and the way that Canada and the United States have participated in LRTAP. Once these were chosen, choices about which additional case studies to add were made based on an array of factors.

Examining Los Angeles meant that an examination of early New York City urban air pollution politics could not be conducted. Studying New York City might have enabled a degree of continuity with the acid rain story, but it would have missed arguably the most important events in American air pollution governance during that period. Similarly, since New York took the lead in American air pollution governance during the 1980s, and has arguably remained in this position, focusing on California would have missed the action spurring the evolution of the CAA. Thus, a compromise was reached; namely, a middle section was added discussing federal air pollution governance developments leading up to the 1990 CAAA, during which point California passed the metaphorical baton in air pollution governance leadership to New York. In the 1980s,

California led the United States in automobile emissions standards, as is had for more than two decades. However, New York and the other Northeast states, suffering from acid rain and violating National Ambient Air Quality Standards (NAAQS; see Chapter 3), caught up by tightening standards to the same level. Furthermore, New York created the acid rain program in 1984 that served as a model for the program under the 1990 CAAA. Subsequently, New York contributed to the evolution of the statute through litigation over federal rulemaking.

Within Canada, the potential options for an additional case study included the largely unexamined politics of smelter pollution in the 1910s and 1920s in Ontario, which are represented by the 1921 Damage by Fumes Arbitration Act; the politics surrounding Ontario's 1967 Air Pollution Control Act and the subsequent effort by the Ministry of Health to regulate Sudbury's smelters; the politics of the 1971 Canadian Clean Air Act; as well as more recent events. However, Toronto in the 1950s was chosen because, apart from the fact that it was previously unresearched, it represented an attempt to govern urban air pollution in Canada's largest and fastest-growing city and coincided with the passage of Ontario's first air pollution control act, in 1958. Furthermore, this case study provides a degree of symmetry with the Los Angeles/California case study, and well as flowing well into the issue of acid rain in Ontario. The Toronto case study reveals that similar processes in governing urban smog took place here as in other cities. It also helps to identify the changes and similarities of how air pollution was addressed in Ontario over time.

For the Canada-US bilateral regime, the Connors Creek case study was added as a way of illustrating the implementation of the AQA. It had been mentioned in the

secretariat's biennial progress reports, as well as in a publication by two retired senior civil servants, as having been particularly important. In the multilateral regime, the participation of Canada and the United States was minimal for the first twenty years of LRTAP's existence. With the discovery of trans-Pacific air pollution in the late 1990s, the United States government has shown an interest in using LRTAP to address it.

3.2.2. Data

As this study covers a wide terrain through space and time, it uses a diverse variety of sources from which to construct the narratives. Scholarly secondary sources were consulted whenever available with the objective of avoiding the unnecessary reproduction of historical research, while also serving as a means to verify the accuracy of the accounts written in this dissertation. When available, the original documents cited by the secondary sources were consulted to verify the accuracy of the sources and provide additional information. Newspaper archives were often used to fill in gaps or as a main source of data for a case study. Other sources include, but are not limited to: reports, newsletters, and press releases by government agencies and non-governmental organizations; the text of statutes; Congressional testimony transcripts; and unpublished documents emailed by people involved in the policy process for the case study being constructed.

The case studies and summaries on US domestic policy—in particular, California in the 1950s and 1960s, and the summary of the federal politics of the early versions of the Clean Air Act—are among the most reliant on secondary sources since they have already been written about extensively. Particularly helpful were Krier and Ursin's (1977), Jones's (1978), Dewey's (2000) and Jacobs and Kelly's (2008) historical

accounts of smog in Los Angeles, as well as Bryner's (1995) book on the politics of the 1990 CAAA. These sections also rely heavily on articles from the *New York Times*. The New York case studies use a few scholarly sources for elements of the time line: articles from a special issue of *Environmental Science & Policy* on acid rain in the Adirondacks (Kraft 1998; P. J. Miller 1998; Randorf 1998), an article on the history of acid rain legislation in New York by Bernard Melewski (2002), and the book on recent American environmental policy by Klyza and Sousa (2008). (Randorf and Melewski are former executive directors of the Adirondack Council, and Klyza is a close friend of one of the lead attorneys in New York's air pollution litigation efforts over a fifteen-year period.) Yet these case studies rely more on newspaper articles; court decisions; and newsletters, reports, press releases, and emails from the communications director of the Adirondack Council, the property-based economic interest group examined.

The two case studies on Canadian politics are based mostly on newspaper archives of the *Globe and Mail* (*Globe*) and the *Toronto Star* (*Star*). This was a matter of necessity—no secondary accounts of Toronto's air pollution politics of the 1950s exist and, with a few notable exceptions, little has been written about the Eastern Canada Acid Rain Program or Countdown Acid Rain. Also, the newspaper archives are easily searchable by keyword using the ProQuest online system. Searches of both newspapers in the 1950s were conducted with keywords such as “smog” and “air pollution”; and in the 1980s with “acid rain” and “Canadian coalition acid rain.” One of the newspaper writers who covered the acid rain issue, Michael Keating of the *Globe*, provided the author with a summary of the newspaper's coverage and its association with the Canadian Coalition on Acid Rain. Two secondary sources—Munton's (2004) article on

the politically-relevant early science of acid rain in Ontario and MacDonald's (1997) doctoral dissertation on the negotiations of Ontario's contribution to Canada's acid rain policy—were used to fill gaps and, more importantly, as reliable sources for checking the facts and ensuring the accuracy of the narrative.

The Trail Smelter Dispute case study used a combination of primary and secondary sources. A considerable amount of information on this topic is available on the IJC's website, including reports and personal letters from the 1920s and 1930s. Furthermore, the text of the 1938 and 1941 decisions by the Arbitral Tribunal are readily available from a variety of sources. These provide summaries of the actions and positions of the stakeholders and discussions of the science underlying the investigation. However, more complete accounts of the Trail Smelter Dispute exist in the scholarly literature; in particular, in Wirth's (1999) extensively-researched book on the topic and a recent volume edited by Rebecca M. Bratspies and Russell A. Miller (2006). The Canada-United States AQA uses many different types of sources. This analysis was able to make use of the same newspaper archival research as on the Eastern Canada Acid Rain Program (ECARP) case study since many of the events of both case studies occurred concurrently. It further relied on newspaper articles to piece together the political context leading to the creation of the 2000 Ozone Annex to the treaty, as well as a letter by the Toronto Board of Health. Although no book has yet been published on the AQA, several articles and book chapters were available to fill gaps and for fact checking—in particular those by Munton (1997; 2007; 1999), Alexander Farrell and Terry Keating (2002), and VanNijnattan (2002; 2003). The Connors Creek Power Plant case study similarly relied on newspaper articles (here, from local newspapers), and also press releases and a letter

by the Citizens Environmental Alliance of Southwest Ontario, a letter by the US Environmental Protection Agency, one by the IJC, a court decision, and a biennial report by the Canada-United States Air Quality Committee. Because this was a recent dispute (taking place in 1998 and 1999), all of this was available on the Internet. A journal article on the dispute by Sally Talberg (2000) was helpful for fact checking and filling gaps.

The case study on trans-Pacific air pollution deals with an unfolding issue, and virtually no existing scholarly literature discusses the politics of it. Thus, it was necessary to pull together a wide variety of sources to create a narrative of the politically relevant events. During the first half of 2011, the author of this dissertation collected journal articles on air pollution science; a file from Task Force on Hemispheric Transport of Air Pollution co-chair Terry Keating providing a time line of events leading to the formation of the task force; press releases from the U.S. Chamber of Commerce; a report by the Alliance for American Manufacturing; newsletters by the Global Atmospheric Pollution Forum; Congressional testimony about the issue; and newspaper articles discussing two topics: (1) trans-Pacific air pollution science and (2) the experience of Walker County, Georgia, as its leaders tried to prevent the county from being judged in violation of the CAA's ambient standards for fine particulates. The author of this dissertation also engaged in conversations with a handful of people involved in the governance and study of trans-Pacific air pollution. The articles and documents were analyzed to form the basis for the account, with each telling some part of the political and scientific story of trans-Pacific air pollution, and often pointing the way to other sources. The personal communications focused on clarifying timelines, the importance of specific

events, and on confirming that the positions of these individuals and the organizations they represent on the issue were accurately understood. In general these conversations steered the author of this dissertation toward other fruitful sources of information; in a few instances they also served as primary sources.

3.2.3. Validity and Limitations of this Research

Since this research project combines observations of both within-unit and cross-unit variation (that is, change within a regime and between regimes), it straddles the interpretivist and positivist paradigms, and thus appeals to two different standards of validity. Interpretivists favor “trustworthiness” as the standard of validity (Bailey 2006; Lin 1998). Also known as “internal validity,” it refers to whether the narrative is an accurate and believable account of the unit under investigation. This entails keeping notes with thick descriptions and fact checking with other sources. Positivists, on the other hand, are more concerned with generalizability, also known as “external validity.” This standard involves the application of the rigors of the scientific method (hypotheses, control variables, structured questionnaires, breadth rather than depth, and so on). Trustworthiness and generalizability are at odds with one another for two reasons, one ontological and one practical. The *ontological* reason is that they presuppose two slightly different conceptions of politics—one prone to law-like regularities or one in which units are unique in themselves. While several political scientists have argued that straddling this ontological divide is necessary for balanced research (Almond and Genco 1977; Gerring 2004; Lin 1998), it nevertheless means that narratives are intentionally homogenized for the purposes of comparability. This is beneficial because it points out similarities that might otherwise go unnoticed. Yet as generalizability increases,

trustworthiness arguably declines, and walking a tightrope between the two exposes a work to criticisms from the standpoint of either standard.

The *practical* reason the two standards are at odds with one another is that it is difficult, in the space of a single research project, to provide sufficiently detailed narratives and enough case studies for comparison. A compromise between depth and breadth must be negotiated which runs the risk of failing at both. While this dissertation (hopefully) uses case studies in a way that is both believable and indicative of how property-based interests participate in air pollution governance, it cannot claim to be the *definitive work on any of these case studies, nor can it claim to be an extensive general overview of air pollution governance in Canada and the United States.*

A second limitation of this research project is that it cannot predict when mobilized property-based interests will be effective in successfully influencing clean air policy. If instances occur in which property-based interests and government departments do not communicate well on a topic, an account of this can be provided, but this does not mean we know in advance that it will happen. Similarly, this study cannot predict the creation of a governing mechanism, lobbied for by property-based interests, that through its implementation excludes their involvement.

Third, this dissertation cannot state with precision the relative importance of property-based interests in reference to other explanatory factors and other actors. Scientific knowledge is certainly important, so are individual personalities, and perhaps public health organizations and other types of environmental groups play a productive role. But an assessment of their importance is outside the scope of this project, except to the extent that it explores the constitutive relationship between scientific knowledge and

the property-based interests that use it and are influenced by it in their efforts to lobby for and develop clean air policy.

3.3. Plan of the Dissertation

The empirical core of this dissertation consists of empirical case studies and summaries divided into four chapters, each representing a spatially-defined air pollution regime: domestic air pollution politics in the United States; domestic air pollution politics in Canada; bilateral air pollution politics between Canada and the United States; and Canada and the United States' involvement in multilateral air pollution politics.

Chapter 2 describes existing theoretical approaches to the study of air pollution politics in the political science subfields of domestic politics and IR. An account of the theoretical approach based on property-based economic elites is also discussed, and distinguished from the existing approaches. The purpose of this chapter is to position the analysis conducted in this research project within the broader relevant theoretical literature.

Chapter 3, on the American domestic regime, begins by discussing California smog policy during the late 1940s through the 1960s. This is followed by an historical overview of federal air pollution legislation, beginning with the 1955 Air Pollution Control Act and ending with the 1990 CAAA. Then, the focus turns to New York. Here New York's acid rain policy of the 1980s and 1990s is covered, as well as the litigation over CAA rulemaking led by the state during the 1990s and 2000s. The purpose of the chapter is to highlight the role of property-based economic interests in air pollution governance in the United States and, in doing so, show how the ways in which actors of this type exert influence have changed as the country's institutions have evolved. Among

the political actors examined are the *Los Angeles Times* and Stamp Out Smog in California, and the Adirondack Council in New York.

Chapter 4, on the Canadian domestic regime, discusses air pollution politics in Ontario beginning with Toronto smog during the 1950s. Following this, it discusses the emergence of the issue of acid rain in Ontario and the policy response to it. The goal is to highlight the role of property-based interests in air pollution governance in Canada, while also showing how the process has changed over time. Among the political actors examined are the *Star*, the *Globe*, the Metropolitan Toronto Civic Conference (MTCC), and the Canadian Coalition on Acid Rain (CCAR).

Chapter 5, on the Canada-US bilateral regime, discusses the Trail Smelter Dispute and the AQA. The discussion of the AQA covers the negotiations, beginning in the late 1970s, through the signing of the treaty in 1991, and also the negotiations for the 2000 Ozone Annex. Furthermore, it explores the implementation of the treaty with a case study of a bilateral air pollution dispute, discussing the AQA's role in the dispute's resolution. Given that both the United States and Canada are participants in this regime, this chapter seeks to assess the difference a national border makes for property-based interests when trying to address air pollution transport. Among the groups discussed in this chapter are the Citizens' Protective Association of Northport, Washington, as well as the *Star*, the *Globe*, and the CCAR.

Chapter 6, on the multilateral regime, discusses the Convention on Long-Range Transboundary Air Pollution and the specific issue of trans-Pacific air pollution. This chapter explores the role that Canada and the United States have played in this historically European air pollution regime. Apart from providing an overview of the

politics and science of an emerging issue of air pollution governance, it seeks to illustrate the relational character of a theory centered on property-based interests, as the groups expressing concern about intercontinental air pollution in the United States are two groups typically associated with industry—the U.S. Chamber of Commerce and the Alliance for American Manufacturing.

Chapter 7, the conclusion, summarizes the findings and, given the questions that remain about why certain regimes were successful and other have not been, offers suggestions for future research.

Chapter 2: Property-based Interests in Multi-level Air Pollution Governance

This chapter elaborates the theoretical approach of this dissertation to the study of air pollution governance, distinguishing it from other approaches. It begins by discussing three classes of theories of the policy processes which have been used to examine air pollution politics and policy development: entrepreneur-based theories, coalition-based theories, and scientific knowledge-based theories. Theories from both international relations and the study of domestic politics have been included in these categories. While this is certainly not the only way that theories can be classified—and indeed, there is no known precedent for the present typology—it is the one most appropriate for the analysis that follows.¹⁰ This is because it enables a consideration of a range of IR theories that have been used and can be used, and compares them to theories of the domestic policy process with which they share much in common.¹¹ These categories are not collectively exhaustive or mutually exclusive; not every IR theory or theory of the policy process is considered, and a few of the theories could be placed into more than one of the

¹⁰ For example, if the analysis here were confined to IR theory, the most obvious distinction would be between realism, liberalism, and constructivism. As useful as this is for theoretical discussions in IR, such an analysis would add nothing to the analysis presented here. On the one hand, it would include a consideration of a theory (realism) not typically used for the study of environmental politics. On the other, constructivism and liberalism are sufficiently broad that a more refined and specific typology, with sensitivity to the differences and similarities between these approaches as relevant to the study of environmental politics, would be needed.

¹¹ Another attempt to list and distinguish political science theories (both domestic politics and IR) relevant to the study of air pollution politics has been undertaken by Wyn Grant (2002). He distinguishes between (1) epistemic communities (discussed below), (2) issue networks, and (3) advocacy coalitions (also discussed below). While Grant's paper effectively assesses the relative appropriateness of using these theories to analyze air pollution governance in the United States and Europe, the objective of this dissertation chapter is to present a slightly broader overview of the existing theories that have been used.

categories. At least, these categories simplify an array of complex approaches and point to similarities where they might have otherwise gone unobserved.

While no claim is made here to falsify these theories in a Popperian sense, this chapter shows that they provide a different account than the one used in this dissertation of how air pollution governance, or governance in general, occurs. With the possible exception of the scientific knowledge-based theories, they were not designed to analyze air pollution governance specifically. While their broad applicability has virtues, a theory providing a convincing account of air pollution governance should include the following two features. First, it should go where the pollution goes; that is, it should not stop at national borders, nor should it presuppose them. This presents a challenge to IR and domestic politics theories, as these two literatures have ostensibly developed somewhat independently of one another. In some instances they employ similar concepts to theories in the other subfield, but with exclusive reference to the subject matter of their own subfield (i.e., interstate negotiations and cooperation or domestic policy processes). Second, the theory should account for what is unique about air pollution (as a byproduct of industrial production) rather than incorporating it into a general theory of global governance or the policy process. Air pollution is a unique political issue, quite different than health policy, human rights, education policy, and the other topics to which these general theories have been applied.

After covering these existing approaches, this chapter briefly discusses Harvey Molotch's theory of property-based interests, discussing how it contributes to our ability to analyze air pollution governance. Afterwards, the chapter compares the theoretical approach developed for this dissertation to the existing constructivist approaches.

Constructivist theoretical approaches tend to be more self-conscious about their theory-defining ontological postulates than other approaches, probably because reflexivity is a constitutive feature of constructivism itself. Given the present prominence of constructivism in IR, it is important to clarify the meta-theoretical differences between it and the theoretical slant taken in this dissertation.

1. Entrepreneur-based Theories

Entrepreneur-based theories place a great degree of importance on the individual(s) introducing the idea, as well as the general social context which allows the norm or policy prescription to resonate and promulgate. The concept of the “norm entrepreneur” is popular in the IR literature and associated with the Norm Life Cycle (NLC) theory of Martha Finnemore and Kathryn Sikkink (1998). It has been used as a framework to examine normative change in human rights (Price 1998) and global environmental politics (Hoffmann 2005). According to the NLC, international norms develop through three stages: (1) norm emergence, in which a norm entrepreneur introduces an idea and persuades policymakers of its importance amid other existing ideas about appropriate behavior; (2) norm cascade, occurring after entrepreneurs push the norm’s adoption beyond a tipping point, and many countries begin to adopt the norm quickly; and (3) internalization, where the norm is taken for granted and compliance is “almost automatic” (Finnemore and Sikkink 1998, 906). “Norm entrepreneurs are critical for norm emergence because they call attention to issues or even ‘create’ issues by using language that names, interprets, and dramatizes them” (Finnemore and Sikkink 1998, 897). They can be organizations or people working in professional capacities, including non-governmental organizations, leaders or staff of international organizations,

or national leaders. “Whatever their platform, norm entrepreneurs and the organizations they inhabit usually need to secure the support of state actors to endorse their norms and make norm socialization a part of their agenda, and different organizational platforms provide different tools to do this” (Finnemore and Sikkink 1998, 900). The persuasion the norm entrepreneurs engage in is more likely to find success and advance the norm beyond the tipping point to the cascade stage of development if it fits with other norms to which the norm adopters subscribe.

Matthew Hoffman (2005) has used the NLC to examine the changing norms of participation in international efforts to address environmental problems (in particular, ozone depletion and climate change). In it, he argues that ozone negotiations were initially characterized by North-only participation, but that, following the suggestion of a “norm entrepreneur” (here, United Nations Environment Programme Executive Director Mostafa Tolba), Southern states became involved in subsequent amendment negotiations. As many Southern states became involved, this altered the normative context that Northern states operated within, and which constrained their own behavior regarding ozone negotiations. Through the process of acting in accordance with these norms, Northern (and Southern) states internalized them, meaning that the norms changed the way state leaders and negotiators thought and what they considered to be legitimate behavior. By 1990, everybody thought that participation should be universal.

Another notable entrepreneur-based theory is Multiple Streams (MS), associated with the work on John Kingdon (2002). This theory is commonly used to provide an account of policy formation (here understood as agenda setting and decisionmaking) in the American political system. In it, Kingdon conceives of a political system consisting

of three independent streams which, when they align, present the opportunity for the creation of policy. These streams are “problems,” “policies,” and “politics.” If a condition is defined by policymakers as a problem, a policy idea exists offering a solution to that problem in a way that is feasible and consistent with the values of these policymakers, and it is consistent with the “national mood,” a “policy window” will open. Kingdon claims that major events gaining national attention (for example, a large oil spill) tend to cause issues to emerge by aligning the problem and politics streams, leading to the choice of a policy from a preexisting set of alternatives that have been promoted for years by “policy entrepreneurs” through a process of “softening up” support for and acceptance of them (Kingdon 2002, 127). This policy window “is an opportunity for advocates of proposals to push their pet solutions, or to push attention to their special problems” (Kingdon 2002, 165). If they do not seize this opportunity, these policy entrepreneurs must wait for the political window to open once again at some point in the future.

As with Finnemore and Sikkink, Kingdon’s understanding of entrepreneurs is sufficiently broad to encompass individuals in a range of professional rolls who advocate policies:

These entrepreneurs are not necessarily found in any one location in the policy community. They could be in or out of government, in elected or appointed positions, in interests groups or research organizations. But their defining characteristic, much as in the case of a business entrepreneur, is their willingness to invest their resources—time, energy, reputation, and sometimes money—in the hope of a future return (Kingdon 2002, 122).

Thus, although these two theories conceive of the political system in a different way, and articulate a different process by which an idea gains traction and becomes policy, they both identify a key role in the policy process for the individuals and organizations who promote their ideas within a setting of ideationally constrained possibilities.

2. Coalition-based Theories

Coalition-based theories examine networks of professionals with knowledge of a particular environmental issue who create policy in that area. For example, Peter Haas's (1989; 1990) work on Mediterranean pollution governance highlights the importance of "epistemic communities" in conducting and framing scientific research and coordinating intergovernmental policy. He defines an epistemic community as "a professional group that believes in the same cause-and-effect relationships, truth tests to assess them, and shares common values" (Haas 1990, 55). International in scope and issue area specific, the professionals comprising an epistemic community share common political objectives and otherwise participate in a range of disciplines and professions, including academia and the civil service. Haas distinguishes them from interest groups on the basis that they are knowledge-based, and that their power derives from their authoritative claim to knowledge. Thus "Unlike an interest group, confronted with anomalous data they would retract their advice or suspend judgment" (Haas 1990, 55).

Haas sees little role for politics in international environmental cooperation; rather, to the extent that epistemic communities are successful, they depoliticize multilateral environmental governance and render it a bureaucratic exercise in science-based management. Hence, "The strength of cooperative arrangements will be determined by the domestic power amassed by members of the epistemic community within their

respective governments” (Haas 1990, 57). Furthermore, “The scope of . . . pollution control arrangements would depend upon how comprehensive were the beliefs of the epistemic community and how long the epistemic community was able to insinuate itself into policymaking” (Haas 1990, 57). Haas (1990, 58) also says that the implementation of the cooperative arrangement is not related to the economic interests of actors participating in the regime, but rather to “the continuing access of the epistemic community to its own government.”

Similarly, Paul Sabatier’s Advocacy Coalition Framework focuses on the policy-making behavior of “advocacy coalitions” comprised of professionals who share scientific and normative “core policy beliefs” on a specific issue and engage in coordinated activity. The core beliefs shared by members of an advocacy coalition:

represent a coalition’s basic normative commitments and causal perception across an entire policy domain or subsystem. They include fundamental value priorities, such as the relative importance of economic development versus environmental protection, basic perceptions concerning the general seriousness of the problem (e.g., air pollution) and its principal causes, and strategies for realizing core values within the subsystem, such as the appropriate division of authority between governments and markets, the level of government best suited to deal with the problem, and the basic policy instruments to be used (Sabatier and Jenkins-Smith 1999, 121–122).

These advocacy coalitions create policy in what Sabatier calls a “policy subsystem,” defined as “those actors from a variety of public and private organizations who are actively concerned with a policy problem or issue, such as air pollution control, and who regularly seek to influence public policy in that domain” (Sabatier and Jenkins-Smith 1999, 119). Any policy subsystem can contain one to four advocacy coalitions which

compete to have their policy preferences realized through government policy. To the extent that a mediator between these coalitions is necessary, “policy brokers” work to find compromises mutually acceptable to coalitions with otherwise irreconcilable belief systems.

A third coalition-based theory used to study environmental politics is Maarten Hajer’s Discourse-Coalition approach. He defines “discourse coalitions” as “the ensemble of (1) a set of story-lines; (2) the actors who utter those story-lines; and (3) the practices in which this discursive activity is based” (Hajer 1997, 65). These storylines defining the coalitions are *cognitive discursive scripts*, adopted by actors acting as a coalition, that unite the coalition. Rather than core beliefs, values, or cause-and-effect relationships holding the coalition together (as with epistemic communities or advocacy coalitions), this function is served by descriptions of the coalition’s activities and of its members engaged in these activities. Similar to Sabatier, Hajer’s account of environmental politics is one of competing coalitions, each with its own understanding of reality, here constituted by the discourse it reproduces. To give an example, in a case study of acid rain politics in the United Kingdom, Hajer identified two competing discourse-coalitions: “traditional pragmatism” and “ecological modernization.” He illustrated how the discourse-coalitions’ divergent ways of perceiving the issue were nested within their own self-understandings, and how these constrained the policy response.

As in the approaches related to norm diffusion, Haas’s, Sabatier’s and Hajer’s focus on the importance of values in the policymaking process (understood slightly differently among the theories), but here the analytic focus is placed on professional

networks rather than specific individuals and their ability to market their ideas. While these three coalition-based approaches have been used to provide lenses for understanding air pollution policy, they do not provide empirical postulates about the nature of air pollution politics. Rather, they consist primarily of ontological postulates or more general empirical postulates about the nature of the policy process. This contributes to the versatility of these theories; they can be effectively employed in issue areas other than environmental politics. Yet, for the purposes of this dissertation, their weakness is in lacking specificity about how air pollution is governed.

To the extent that these theories contain material specific to environmental politics, it relates to their understanding of science and learning: the Epistemic Community approach and ACF conceive of an iterative relationship between the coalitions' promotion of policies on the basis of science and learning from science (although with disagreements about the depth of this potential learning), while the Discourse-coalition approach underscores the fact that scientific knowledge is a social product, created by scientists who construct the problems they study. Thus, these classes of theory share a degree of overlap with the science-based theories of the environmental policy process.

3. Science-based Theories

It is possible to distinguish between two types of science-based theory: (1) constructivist science-framing theory and (2) scientific knowledge analysis theory. Science-framing theory is concerned with the social processes through which existing scientific knowledge is made policy relevant (Farrell and Keating 2002; Litfin 1994; Litfin 1995). To give one notable example, Karen Litfin provides a constructivist

account of cooperation to address the problem of ozone depletion. In it, she discusses discourse and its importance in giving meaning to science in encouraging international cooperation to address environmental problems. She is interested in the conditions under which discursive shifts occur, who causes these shifts, and in particular how a shift occurred in the ozone case from regulatory to precautionary action. Two concepts are used to explain these discursive shifts: (1) knowledge brokers and (2) exogenous shocks or crises. Knowledge brokers are people who frame research-derived scientific information in accordance with their subjectively defined interests. Science has no absolute meaning, and can be used to justify a variety of interests. The influence of these knowledge brokers “derives from the plausibility of their interpretations, the loudness of their voices, and the political context in which they act” (Litfin 1995, 254). Unlike with coalition-based approaches, Litfin’s knowledge brokers are not necessarily bound by shared normative ideas. Moreover, she states that the Epistemic Community approach “should be supplemented with an attentiveness to the ways in which discursive practices promote specific narratives about social problems” (Litfin 1995, 252).

Litfin’s reliance on shocks or crises to explain discursive shifts underscores the fact that discourse cannot be completely separated from material conditions. As she explains, “For environmental problems, disasters and crises are often the contextual factors that serve as a kind of mold within which accepted knowledge is cast, thereby permitting hitherto rejected ideas to gain a hearing” (Litfin 1994, 38). In Litfin’s case study of international cooperation to address stratospheric ozone depletion, she points out that the discovery of the Antarctic ozone hole (announced in May 1985) was such a crisis. “Its discovery, suggesting that the consequences of under-reacting might be worse

than the consequences of over-reacting, promoted the discourse of precautionary action” (Litfin 1995, 261). Nevertheless, in pointing out limits to the latitude policymakers have in framing scientific evidence, Litfin suggests the utility of the analysis of scientific knowledge for an understanding of environmental governance.

Scientific knowledge analysis theory looks at the state of scientific knowledge for an explanation of environmental policy progress. Scholars applying this approach disaggregate scientific knowledge into multiple dimensions and construct narratives about the relative importance of these different dimensions. Kenneth Wilkening (2004), for example, distinguishes between “universal knowledge” about a problem and “local knowledge,” and illustrates how the latter tends to be the most politically relevant. He also distinguishes between several types of scientific concepts which help to bridge local knowledge into scientific discourse, among them concepts expressing the existence of a problem, the extent and/or intensity of a problem, cause-and-effect chains, the impacts of a problem, and the solutions to a problem. Radoslav Dimitrov (2003; 2005) similarly distinguishes between scientific knowledge of the extent or magnitude of an environmental problem, the causes of a problem, and the consequences. Employing a cross-unit analysis of four case studies of multilateral environmental politics, Dimitrov argues that scientific knowledge of the consequences of environmental problems tends to be decisive by enabling costs-benefit calculations to be developed and enter into political decisionmaking.

All three of these classes of theory (entrepreneur-based, coalition-based, and science-based) have been used, in some form, to develop accounts of air pollution governance (Browne and Keil 2000; Haas 1989; Haas 1990; Hajer 1997; Hoffmann 2005;

Hoffmann 2007; Litfin 1994; Litfin 1995; Wilkening 2004; Wilkening 2011a). However, by focusing on individuals, coalitions, and science, they arguably miss the source of the political incentive to address the problem in the first place, namely, the property-based interests who not only lobbied governments for air pollution relief, but who also conducted research about the consequences of air pollution and were actively involved in the policy formulation.¹² While they often acted as coalitions, and as entrepreneurs, this fact does not consider what is unique about the important actors in air pollution governance. After all, the statement that coalitions of like-minded people are important, and that single individuals and groups can be identified as having provided the ideas that were acted on, is not a novel observation—how could it be otherwise? An approach is needed that identifies the types of actors engaged in cooperation and conflict over air pollution and, given this, how this conflict and cooperation play out. Such an approach, by virtue of being richer in empirical content than approaches applying to a diversity of issue areas, can underscore the fact that air pollution governance is a highly political process which designates economic winners and losers, not the bureaucratic-management process outlined by Haas (1990).

Moreover, science has been important in North American air pollution governance, but so have conjectures and half-truths, and the degree to which either of these contributes to air pollution governance is contingent on a number of factors, including whether the problem is detectable to the naked senses, the complexity of the problem, and the resources available to the interests engaged in negotiations to make use

¹² See Grant for similar concerns as those expressed in this chapter. In particular, Grant (2002, not paginated) argues that an attempt by Sabatier to use the ACF to explain American air pollution policies during the 1970s and 1980s departs from the theory's postulates and resorts to "an interest based rather than ideas based coalition."

of this knowledge in a convincing way. Notably, scientific knowledge has not always enhanced air pollution governance by making standards tighter or substantive policy more likely. In the Trail Smelter Dispute, the strongest scientific case was presented by the smelter, and was used to justify less stringent smoke controls than what the aggrieved property owners sought. Neither these downwind farmers, nor the inhabitants of Toronto during the 1950s, needed science to tell them they were suffering from air pollution, or what was causing it. (They did, however, attempt to quantify the costs of the damage, which reflects a type of knowledge, even if not rigorous by contemporary standards.)

At the same time, acid rain and ground-level ozone are much more complex problems than visible smoke and particulate matter, ones in which an absence of knowledge of the causes would have prevented a policy response. Thus, as Lidskog and Sundqvist (2002) point out in their exploration of the role of science in LRTAP, it appears that the relationship between scientific knowledge and economic interest in air pollution governance is both dialectical and historically contingent. These authors conclude “that knowledge never moves freely, that the value of science is a result of negotiations and that science and policy are co-produced (interdependent)” (Lidskog and Sundqvist 2002, 83). Any complete analysis of the politics of air pollution must account for the then-current state of scientific knowledge and how that became relevant in the policy process. However, it must also account for where the political will to address the problem derives from.

4. Property-based Interests and Air Pollution Governance

In his analysis of the politics of urban areas, Harvey Molotch (1976) shows that the most important interests in shaping cities are the property-based interests which

benefit from rising land values when economic growth takes place. Labeling cities “growth machines,” he argues that the influence of these landed interests can explain why urban policy is generally conducive to urban growth, often at the expense of competing values such as income redistribution or, at times, environmental protection. Property-based interests compete to maximize the value of their parcels by increasing their land-use potential at the expense of other parcels, often by enlisting the government to take actions benefitting them. Molotch (1976, 313) says that “this organized effort to affect the outcome of growth distribution is the essence of local government as a dynamic political force,” and, indeed, is its “key” function. Despite competition and the conflicting interests among local elites, they all share an overriding concern with growth, and this consensus is what enables local governments to pursue it at the expense of the goals of industrial actors, who tend to be less concerned with urban growth and more with the management of the broader (non-local) economy.

The first author to apply Molotch's urban theory to the study of air pollution politics was George Gonzalez, who showed that, historically, clean air policy has been developed by these landed interests. He argues that “clean air policies are functional to the operation of the market and to the realization of profit,” thus property-based interests have an incentive to pursue them in their locale (Gonzalez 2005, 2). Gonzalez's research on Los Angeles indicated that, among the most influential local actors providing the political incentive for air pollution relief were a range of local growth-oriented actors and coalitions, and the urban newspaper (the *Los Angeles Times*). These actors not only affected municipal and provincial or state policy, but also federal policy on auto emissions. There is a common observable behavior among both classes of actors,

namely, presenting information about the extent and consequences of air pollution and lobbying the municipal, provincial/state and, in some instances, federal governments for specific actions to address the issue.

Local growth coalitions and organizations are associations organized to support local business interests by lobbying for policy supporting economic growth and land values. Groups fitting this description include, but are not limited to, local or regional chambers of commerce; land developers, tourism, recreation, and homeowners' associations; and local elite policy planning groups. Since the early 1970s, they also include self-described or ostensibly environmental groups with an accompanying concern for economic growth and rising property values that view conservation and environmental protection (within limits) as harmonious with these economic objectives, and, often, are members of coalitions that include other environmental groups and property-based groups.¹³ Explaining the motivation of these groups to contribute to air pollution governance, Gonzalez (2005, 4) writes:

members of local growth coalitions are forced . . . due to their economic interests, to adopt an emphasis and outlook that focuses on local political and policy issues. It is because their economic well-being is tied to specific land that members of any given

¹³ As stated in Chapter 1, environment-themed organizations which also represent the interests of property tend to be regional and represent property development interests. In many instances, they are also coalitions of actors which include chambers of commerce, development corporations, tourism and cottage-owners groups, as well as environmental, recreation, and conservation groups. The policy objectives of the coalition constitute the area of overlapping concern among the actors involved. Acid rain, for example, has been of concern to property-based groups due to the economic damage caused by the phenomenon, and to environmental groups for arguably different reasons. Yet these groups have been able to work together on this issue and oppose heavy industry in seeking abatement measures. As such, modern coalitions aimed at promoting clean air policy have a complex identity as an assemblage of interests coalescing on a suite of issues.

growth coalition are prompted to consider the issue of air quality as it relates to those locations where their economic future is vested.

Furthermore, Moloch (1976, 311) is clear that his theory is not one merely of cities, but of any circumscribed locality:

We need to see each geographical map—whether of a small group of land parcels, whole city, a region, or a nation—not merely as a demarcation of legal, political, or topographical features, but as a mosaic of competing land interests capable of strategic coalition and action.

Thus, the behavior of landed interests in seeking to maximize the land-use potential of their property scales, for air pollution abatement, depends on the source-receptor relationship. This explains why American industrial interests behave as property-based interests with respect to trans-Pacific air pollution, but as typical industrial interests with respect to domestic air pollution standards (see Chapter 6 of this dissertation).

Several caveats and clarifications are appropriate here. First, while profiting from the use and sale of land may be the motivation for property-based interests to lobby for air pollution relief, it is within the range of possibility that property owners also act out of a concern for the enjoyment their property separate from concerns of economic rewards. On the issue of air pollution, these property owners may serve as natural allies for the local tourism industry or others who benefit from economic growth and are willing to expend their economic resources for policies conducive to this growth. Cottage owners in the Muskoka District and the Adirondack Park, for example, may not have been motivated entirely out of a desire for profit on rising property values. Nevertheless, this ambiguity of motives does not change the underlying social process illustrated in this dissertation; namely, that political actors seek air pollution relief in order to preserve and

enhance the value of their spatial location—their “property”—for whatever reason they value this property.

Second, the statement that property-based interests seek economic growth does not necessarily mean this is growth without limits. In the Adirondack Park, the characteristic of the growth promoted is one that will help tourism to grow, not overall population. This entails building luxurious resorts, maintaining quaint bridges, beautifying main streets, enforcing development restrictions, and so on, with the objective in enabling property owners to increase profits on tourism during the tourist season while preventing short-term profiteers from engaging in economic activity that undermines the region’s long-term prosperity.

Third, the process examined here is one of economically-motivated actors located within a receptor region, locked in a source-receptor relationship, in which the source is not motivated economically to improve the air in the receptor. Property-based interests are thus spatially bound, and spatially-bound interests are confined to property. Polluting manufacturers in urban areas may locate there because cities offer access to transportation, professional services, and a diverse labor pool. But as industry, they are concerned with the health of the broader economy which serves as the market for their goods. Any depressed economic activity in their home city or region as a result of the pollution is a cost of business, and arguably a lower one than should they be required to internalize the costs of pollution.

Fourth, and related to the third caveat, an industry or industrial firm which benefits economically from relaxed regulations lowering its costs may suffer from the effects of pollution, or the economic activities that cause the pollution, from another

source area. Thus, as mentioned above, an industrial coalition may act as industry in the context in which it is a source of pollution, and as property in the context that it is a spatially bound receptor. The Alliance for American Manufacturing and the U.S. Chamber of Commerce are two examples of industrial groups that lobby for relaxed regulations domestically, yet have expressed concern over and lobbied for a resolution to lax air pollution standards in China and the effects of this pollution. If these groups represented industries that could easily set up shop in China in response to the problems related to the long-range transport of air pollution, there would be little reason for this lobbying. However, several industries are at least somewhat immobile and spatially bound (or else they would move), and thus have an economic interest in lobbying for air pollution relief or at least regulatory relief from the pollution travelling to their location.

Fifth, this process is influenced superficially, but not fundamentally, by some regulations, notably NAAQS. NAAQS, explained in more detail in Chapter 3, impose a penalty on an area in violation of them by curtailing economic activity resulting in their violation. Thus, they provide an economic incentive for businesses that would not otherwise be concerned with air quality to take measures to lessen local pollution, as well as potentially try to have standards weakened (sometimes at the same time).

Sixth, as newspapers are understood here as examples of influential property-based interests, this merits an explanation. Little precedent exists in the environmental politics literature for examining newspapers as policy actors. This is likely due to the preference, in North America, for accounts of environmental policymaking by federal governments (be it national policy or international commitments) where the influence of local media is arguably less prevalent. Nevertheless, in the urban sociology and

environmental sociology literature, this understanding of the role of newspapers is well established thanks to Molotch's work.

Molotch and Lester (1974) contend that the news is a constructed reality reflecting the practices of those in a position to determine the information that others have access to and experience as reality. Politicians, newspapers, and other media, are actors who define what counts as a public event for the public's consumption according to their own objectives, whatever they are. Thus, Molotch and Lester (1974, 111) encourage analysts of the mass media "to look not for reality, but for purposes which underlie the strategies of creating one reality instead of another." Furthermore, Molotch (1976, 315) argues that the metropolitan newspaper is "the most important example of a business which has its interest anchored in the aggregate growth of the locality" for "the newspaper business seems to be one kind of enterprise for which expansion to other locales is especially difficult." Its fortune is thus tied to that of its metropolitan area. More significantly, it is not concerned about the geographical pattern of growth within a city or about what type of business its advertising revenue comes from as long as growth occurs:

The newspaper has no axe to grind, except the one axe which holds the community elite together: growth. It is for this reason that the newspaper tends to achieve a statesman-like attitude in the community and is deferred to as something other than a special interest by the special interests. Competing interests often regard the publisher or editor as a general community leader, as an ombudsman and arbiter of internal bickering and, at times, as an enlightened third party who can restrain the short-term profiteers in the interest of more stable, long-term, and properly planned growth (Molotch 1976, 315–316).

More than one property-based interest among many, the local newspaper is the most generalized expression of a city's property-based interests.

That said, although the urban newspaper has been important in the past in promoting clean air policy, there exists reason to believe that it is losing its pride of place as the “arbiter of internal bickering.” The recent consolidation of the American newspaper industry and related decline of local newspapers and rise of e-papers such as the *Huffington Post* suggest that the decoupling of news source and locality is at an advanced stage (Madigan 2007). While it is outside the empirical scope of this research project to say, it seems possible that the influence of the local print media in air pollution governance is a historically contingent fact that may be less true now than in the past.

Seventh, and finally, in order to account for variation among case studies, this dissertation further argues that a fluid and substantive policy regime can be derailed into a status quo by two factors; namely, too much cooperation, and too little. An overabundance of cooperation through the de-politicization of governance and the exclusion of actors with an economic interest in the implementation of the regime insulates an issue from the fluid political process in which policy outcomes are negotiated. At least two different but related status quo realities are coterminous with this overabundance of cooperation. One is what is commonly referred to as an iron triangle, or clientele pluralism (see A. G. Jordan 1981; Atkinson and Coleman 1989). While these two theoretical descriptions are defined slightly differently in the literature, the broad meaning is the same: they describe scenarios in which a government cedes the policymaking function to an economic interest group, which channels its policy preferences through the government to which it has a privileged relationship. While air

pollution governance has at time taken on the character of arrangements of this sort, this is not the focus of this project as it is more concerned with policy change than stasis.

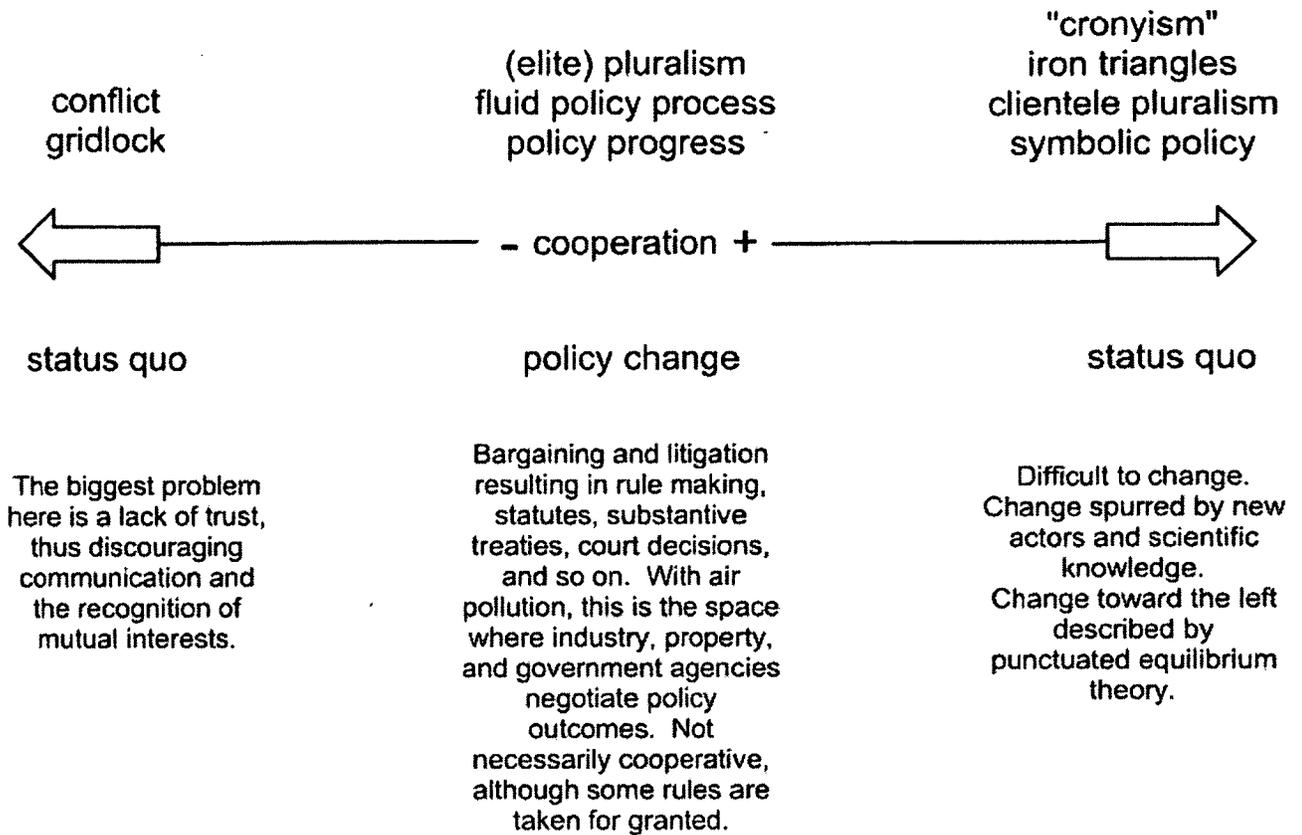
A second status quo that at times exists when an overabundance of cooperation occurs is governmental collusion to misrepresent stasis as progress; that is, when symbolic policy pretends to fill a governance vacuum that either continues to exist or no longer exists. Arrangements such as this are arguably more common in executive dominated legislatures such as Canada than in the American government, where distrustful legislatures draft action-forcing clauses into legislation enabling litigation over the implementation of statutes (Knopff and Glenn 1996). In Canada, by contrast, statutes tend to be action enabling, leaving the implementation to the executive and arguably de-politicizing and bureaucratizing the governance of the issue. These types of collusive arrangements are of interest in this dissertation since they ostensibly represent policy progress. A closer examination of who is involved in the implementation of the regime is necessary to identify such arrangements as contributing to the status quo in air pollution governance.

Too little cooperation similarly leads to a status quo in which an issue of importance is not addressed even though some actors may have an expressed policy preference on the matter. As discussed in Chapter 1, Klyza and Sousa (2008) argue, in a recent study of American environmental policy since the 1990 CAAA, that (Congressional) gridlock has been a persistent trait of American environmental policy during this period. Nevertheless, environmental policy change has occurred through other means than Congressional environmental statute-making (see K. Holland 1996; Klyza and Sousa 2008). The type of gridlock of interest in this research project occurs

when these other means are not available because actors with similar concerns, problem definitions, or even policy preferences cannot reach a consensus on how to proceed. This type of gridlock can potentially result in a policy vacuum on an issue of acknowledged importance, but in which the interest group and government agency that would need to work together to address it lack an established record of cooperation.

The relationship between cooperation, substantive governance, and property-based interests is depicted in Figure 1. Three categories have been placed along a continuum of cooperation, each representing one of the three possible scenarios for air pollution governance discussed above. On the far left is gridlock over how to address a recognized problem. Here actors who might otherwise cooperate or compete to formulate a response cannot agree on constitutive rules about how to proceed—most importantly, rules such as who should participate in the policy process, but also rules over what policy instruments to use. This is most likely to occur among organizations and institutions unaccustomed to cooperating, perhaps because they are sharply opposed to one another on other issues.

Figure 1: Cooperation and Policy Change in Air Pollution Governance



On the far right is the cozy and collusive relationship between policymakers discussed above. It represents the equilibrium status that Frank Baumgartner and Bryan Jones (1993) claim the policy subsystems for many issues exhibit. As these authors have shown, however, this equilibrium is occasionally “punctuated” as new actors find influence in the policy subsystem, new scientific knowledge becomes accepted and relevant, and as an issue becomes politicized through popular media attention. When this happens, governance on the issue becomes less bureaucratized and more competitive, consistent with a pluralistic understanding of the policy process.

In the middle is the space represented by a pluralistic policy process. The process described in this dissertation for air pollution—in which industrial and property-based economic interests compete for their preferences to become policy—is a somewhat elite form of pluralism to be sure, similar to that outlined by Charles Lindblom (1977) in *Politics and Markets*. According to Lindblom, in American pluralism, the influential political actors are those economic elites and businesses with the necessary proficiencies and economic resources at their disposal to influence policy. As Elmer Eric Schattschneider (1960, 35) eloquently put it half a century ago, "The flaw in the pluralist heaven is that the heavenly chorus sings with a strong upper-class accent." But it is still a process responsive to environmental problems that economic elites identify and try to address. While this political environment may not be cozy or appear cooperative among opposing groups (indeed, it may include the use of litigation as a policy instrument), there nevertheless exist shared ideas about what constitute legitimate procedures for policymaking and who should have the authority to make binding decisions.

5. Meta-theoretical Considerations

In each of the three categories of theory above from which the approach used in this dissertation has been distinguished, at least one self-described constructivist approach has been placed; namely, Finnemore and Sikkink's NLC theory, Hajer's Discourse Coalition approach, and Litfin's analysis of scientific framing. This was not intentional; it is partly due to the fact that this dissertation is engaging with IR theory (in addition to theories of the domestic policy process), and constructivism has become an increasingly popular approach to the study of international relations over the past twenty years (see Checkel 1998; Guzzini 2006). The malleability of constructivism sufficient

for it to exist within these three categories reflects constructivism's status as a set of ontological postulates that can be mapped onto a range of understandings of concepts. While there are many constructivisms, mainstream IR constructivism maintains that social structure and agents (however these are understood) are mutually constituted and recursively generated. Structure constrains the behavior of agents and perhaps generates their properties (usually understood as identities and values) while agents reproduce structure through their actions (Dessler 1989; Kratochwil 1989; Wendt 1987; Wendt 1992; Wendt 1994; Adler 1997; Onuf 1998; Risse 2000). These structures are generally understood as ideational phenomena, implying that, while distinct from the agents, they exist as collectively held ideas which are subject to modification over time as historical cultural shifts.

The constructivist ontological postulates can be mapped onto a range of observable phenomena. For example, *structure* can be understood as the defining ideational features of the global financial system, or of the relationships of family members within a household. Similarly, agents can be anything understood to have free will or human agency, including individuals or nation states. In Hoffmann's (2005) application of the NLC, the structure is what he calls the "normative context," and his interest is in how a norm entrepreneur was able to alter that structure so that state agents adopted different norms of participation. For Hajer (1997) one of the structures examined is the "ecological modernization" discourse, which is nested within other structures in domestic society (and thus, as he shows, different in the United Kingdom than in the Netherlands), and reproduced by the coalition utilizing it to describe the issue of acid rain. Litfin (1994) is interested in the "precautionary discourse" which, through

its reproduction by knowledge brokers, affected the way in which stratospheric ozone science was framed.

Thanks to its dynamic conception of agent and structure, and the associated assumption that many of the relationships between variables observed by political scientists are historically contingent since they are reflective of agents and structures at a particular time and place, constructivists are reluctant to make statements about law-like regularities (Cox 1986; Fearon and Wendt 2002). Rather, the constructivist methodology tends to examine events as unique in themselves and to trace ideational change over time.

The advantage for constructivists is that their theory can never be falsified. The disadvantage is that it is devoid of empirical content. Alternative approaches, by contrast, run the risk of eventually becoming obsolete by specifying an ideational order which may change. The Michigan Model of vote choice (Campbell et al. 1980) and Realism in IR (Morgenthau and Thompson 1993; Waltz 1979) are notable examples of theories which are less relevant at the present than in the past due to cultural shifts in the domain of politics they seek to describe (Nie, Verba, and Petrocik 1999; Russett and Oneal 2001). In general terms, the Michigan Model claims that Americans tend to vote in federal elections based on their partisan identification. This was truer in 1960, when *The American Voter* was published, than it has been for the past twenty years. Realism similarly makes assumptions of the ideational nature of the international system which it views as fixed and unchanging; namely, states seek power, fear each other, and are thus more concerned with relative gains rather than absolute gains (Mearsheimer 2003). In IR parlance, it is aptly described as a “materialist” theory since it abstracts away ideas by

holding them constant and explains behavior in reference to the distribution of “capabilities” (e.g., weapons and money) (Waltz 1979).

The theoretical approach used here to analyze air pollution governance is also a materialist theory. It presupposes that property-based economic elites tend to view growth as important to their success, and that air pollution abatement is necessary for growth. These actors do not act on the basis of a shared ecological worldview (although they may describe their behavior as such), but instead out of what is necessary to perpetuate the conditions enabling their economic objectives. It also assumes that industry is generally unconcerned about air quality, and defines their economic imperatives as necessitating keeping costs low and opposing the imposition of controls on industrial production. A constructivist may point out that this reality is historically and spatially contingent—that things may operate differently in other parts of the world, or that industrialists may undergo an ideological shift in the future, causing them to embrace an ecological worldview. Capitalism may very well be consistent with an intrinsic valuation of the environment, but a central part of the argument of this dissertation is that this is not the basis on which air pollution governance has occurred in Canada and the United States for much of the past eighty years.

Moreover, changes over time are described here, but it is changes through which the empirical regularities identified are expressed, rather than changes in social values. These changes are institutional, science-informed, and semantic. The institutional changes are legal developments setting the rules that property-based and industrial economic interests use to negotiate clean air policy. These include the development of the CAA and the shift in Ontario’s air pollution governance from municipal to provincial

jurisdiction. The science-informed changes are that conditions not previously understood as problems became known as such when science revealed their causes and costs. Acid rain, ground-level ozone, and trans-Pacific air pollution are among several notable examples. Constructivists might point out that advances in scientific knowledge prompted a change in values among the activists whose activities are examined here, which is reflected in the change in semantics (i.e., the “environment”). However, the analysis suggests these semantic changes are, at least in some instances, ways of maximizing influence for the purposes of economic gain. The Adirondack Council considers itself an environmental group, the Metropolitan Toronto Civic Conference of the 1950s did not; yet despite these semantic differences their membership and behavior in pursuance of clean air policy share much in common.

6. Conclusion

The approach to the study of air pollution politics used in this dissertation is a materialist theory with application within cities, states and provinces, nations, and between nations. No claims are made here about its applicability for the study of other issues, environmental or otherwise. Also, the empirical postulates comprising the theory are historically and spatially contingent. To the extent this dissertation is able to show that the political incentive to address air pollution rests with property-based interests lobbying their governments and developing policy, that newspapers are particularly important in this process, or that scientific knowledge proved important (or not), these claims are specific to Canada and the United States during the time period covered. The tradeoff is that, unlike the other theories of IR or the domestic policy processes discussed

above, this approach arguably isolates a central feature of North American air pollution politics, without a consideration of which other studies are incomplete.

Chapter 3: Smog and Acid Rain Governance in the United States

This chapter contains three case studies of air pollution governance in the United States: California from the late 1940s through the 1960s, New York State's response to acid rain in the 1980s and 1990s, and the litigation over the regulatory mechanisms of the CAA during the late 1990s and 2000s, with the analysis concluding in 2010. The case study of air pollution governance in California discusses the influence of the state's property-based interests in clean air policy and the centrality of municipal and state governments in this process. For the New York case study, this chapter presents a time line, and then discusses the role that a property-based interest group, the Adirondack Council, played in bringing about air pollution abatement in New York and, in addition, contributed to the development of the CAA. As the goal is to illustrate the developments that have occurred in the American air pollution regime over time, this chapter discusses federal statutes from the late 1950s to the 1990 CAAA. The summary of the politics surrounding the federal statutes from the 1950s to the 1990s shows that, while the federal government gradually created a statutory basis for governing air pollution, the process of its evolution has been guided by regional concerns specific to states. Rather than occurring as a federal government-guided process of standard setting, rules are politicized by political representatives of American states and regions because of the economic costs and benefits to these rules. Every air pollution rule has economic winners and losers; and it is competition among, and negotiations between, these that determines much of the content of American clean air policy.

On the basis of this historical overview and the California and New York case studies, this chapter argues that the American air pollution regime has evolved from

being fragmented into local jurisdictions to being increasingly interconnected through the evolution of the CAA as a legal instrument for states to influence the air pollution policy of other states. Property-based interest groups continue to participate as decisive political actors, but the means by which their influence is expressed has changed as air pollution has come to be understood as a long-range transboundary environmental problem, and as environmental policy has increasingly been influenced by actions in the courts.

1. California Air Pollution Policy until 1970

The most active region for air pollution governance during the first two-thirds of the twentieth century arguably was California. This is due, in part, to a confluence of demographic and geographical realities, namely, rapid migration to an area experiencing frequent temperature inversion.¹⁴ The latter geographical phenomenon occurs when cold air over the ocean slips below the layer of warm air above the city. The result is that substances emitted at the ground level rise only through the layer of cold air, getting trapped by the warm air above. Making matters worse, the Los Angeles basin is lined with mountains to the North and East, holding the polluted air in place as the sea winds blow ashore (Ingraham 1961; Hill 1947; Krier and Ursin 1977). The problem was already occasionally apparent in the late nineteenth century, but became clearer when rapid migration and industrialization occurred during the early decades of the twentieth century.

¹⁴ Gladwin Hill of the *New York Times* reported that, in 1955, the population of Los Angeles County grew by roughly 5,000 per week. He added, "This growth maintained a volume of home building in the county topped by only two entire states, California and New York, according to Federal reports covering the first half of the year. California's six-month volume of 117,306 dwelling units was more than double New York state's and the Los Angeles metropolitan area's 60,022 was more than 12 per cent ahead of the New York City-northeastern New Jersey metropolitan area" (Hill 1956, F1).

In 1905, the City of Los Angeles passed its first of several smoke ordinances; by 1907, it employed smoke inspectors who examined the causes of public complaints; in 1930, noxious odors became targets of regulation; and, in 1931, oil-burning orchard heaters fell under the regulatory hand (Dewey 2000; Jacobs and Kelly 2008).

Nevertheless, the pollution problems became worse as the population grew and economic development pressed ahead. By the early 1940s, local economic elites began to perceive the smoke and fumes as threats to growth, and more substantial political measures were taken. The first attempt was the creation of the Los Angeles County Smoke and Fumes Commission (SFC) by the Los Angeles County Board of Supervisors in October 1943. The SFC failed to draft a countywide air pollution control ordinance and was disbanded in January 1945, though it did contribute to knowledge about the air pollution problem. It was succeeded by a couple of other entities: the City of Los Angeles' Bureau of Air Pollution Control, created in in November 1944; and the county's adopted proposal for a joint county-city control effort (including a professional staff) (Dewey 2000).

By the summers of 1946 and 1947, however, the air pollution problem had become substantially worse. The population of the LA metropolitan area grew and the governmental air pollution bureaus were unable to address the problem effectively since they had insufficient budgets, staff sizes, and lacked the authority to convince polluters to lessen their emissions. Jacobs and Kelly (2008) opine that the lack of authority was due to the fact that there was little conclusive evidence of the causes of the pollution or a clear indication of a sustained political will by the governments to address the matter. The problem had become so burdensome for the regional population, however, that the local elites with an economic interest in growth took measures to address it, despite the

fact that there was little public outcry among the non-elite inhabitants of the area (Roberts 1969; Dewey 2000; Gonzalez 2002). In his study of air California air pollution politics during this period, George Gonzalez argues that Los Angeles was a “growth machine” in which local elites guided policy aimed at increasing property and investment value in the region. He contends that “many of the individuals, institutions, and interests that promoted and economically benefited from Los Angeles's growth also took the lead in shaping and establishing California's pollution control efforts” (Gonzalez 2005, 87). At this time, this included local real estate and hospitality businesses and the local media, in particular the *Los Angeles Times (Times)* newspaper. Largely as a result of the activism of the *Times*, and despite the protests of railroad, lumber, and oil interests, the state assembly and senate passed Assembly Bill 1 during the summer of 1947 which created the Los Angeles County Air Pollution Control District (APCD) and gave it the authority to issue regulations and require permits for industries releasing pollutants (Dewey 2000; Jacobs and Kelly 2008; Hill 1947). The APCD was also given a large initial budget of \$178,000 (nearly as much as Toronto had ten years later) and “a staff of forty-seven engineers, research men, inspectors and office workers” (Hill 1947, E6).

The research on the causes of air pollution was limited at that time, yet the APCD still made significant progress in developing the policy response. In his review of the history of air pollution politics in California, Scott Hamilton Dewey (2000, 45) states:

the APCD focused on large, stationary industrial emission sources as the likely cause of most of the smog. By 1949, grey iron foundries had been controlled as far as available technology allowed, and the APCD rightly rejected specious claims from industry representatives that the cost of installing control equipment would price them out of the market. By 1951, open-hearth steel mills were similarly controlled, and oil storage tanks

were required for the first time to have floating lids to prevent the evaporation of hydrocarbons. The heavy particulate emissions—black smoke and soot—that typified air pollution problems in coal-burning eastern and midwestern cities were almost totally eliminated in Los Angeles during the early 1950s through strict enforcement of a ban on visible emissions. Through such accomplishments, Los Angeles was already becoming the national and world leader in air pollution control at this time.

From 1954 to 1956, the funding of the APCD rose substantially and the staff size nearly tripled (Dewey 2000; Jacobs and Kelly 2008; Anon. 1954c). With these resource enhancements, the APCD issued more court citations, with a more than ninety percent conviction rate during the first half of 1955. The APCD regulated other stationary sources such as refineries that released sulfur dioxide and hydrocarbons, as well as banning backyard garbage incinerators in 1957 (Ingraham 1961). Following this, in 1958, came “Rule 62,” requiring that all steam power plants burn natural gas six months of the year rather than the high-sulfur heavy fuel oil (later extended to seven in 1961). This was coupled with a “co-operative voluntary program known as ‘Operation Fuel Switch’” for the months when Rule 62 did not apply (Chass and George 1960, 34). With this, the “Oil refineries, power plants and other industrial fuel users” were asked to “voluntarily cease the burning of fuel oil” on days when the APCD forecasted heavy fog. Later, in 1966, the county supervisors passed “Rule 66” regulating stationary sources of hydrocarbon emissions: those from industrial solvents, paint, and other architectural coatings (Dewey 2000; Hill 1955b; Hill 1966d; Jacobs and Kelly 2008; Anon. 1959f).

At the same time that the APCD was regulating stationary sources of pollution, it was also funding research into the causes of the smog problem. By 1950, it had become increasingly obvious to the leadership of the APCD that volatile hydrocarbons (released

by a number of sources including automobiles) were largely responsible for smog. And since all of the other sources of (in particular, refineries and backyard incinerators) had been progressively controlled or eliminated throughout the 1940s and 1950s, it was clear that automobiles were the primary cause. A report released in July 1954 by the Stanford Research Institute confirmed this, spelling out the relative contributions made by various sources and nature of the chemical reaction resulting in ground-level ozone (Hill 1955a; Hill 1955b; Krier and Ursin 1977; Anon. 1955j; Anon. 1954b; Plumb 1955).

Dewey (2000) reports that the APCD director was sufficiently concerned about pollution caused by automobiles that he visited Detroit in 1953, leading the automakers to take some sort of action. In January 1954, the Automobile Manufacturers Association announced "the formation of a committee of experts to investigate possible effects of automobile exhaust [sic] gases on air pollution" (Anon. 1954a). The task of the newly-created Vehicle Combustion Products Committee was to "determine whether exhaust gases contribute to air pollution and the creation of smog and, if so, to what extent and what are the pollution solutions" (Anon. 1954a; see Caplan 1963). Also, in 1953 the county supervisors and their legal council explored the possibility of requiring the installation of exhaust control devices on automobiles, deciding that they would not be able to do so until the technology already existed (Dewey 2000; Jacobs and Kelly 2008).

Since Los Angeles County could do little to regulate automobiles, as well as the smog that drifted into the areas from other counties, local leaders soon called for state involvement. After a particularly heavy smog episode in October of 1954 closed schools for most of the month, Governor Goodwin Knight received increased pressure to address the matter and, in 1955, the Department of Public Health created the Bureau of Air

Sanitation to examine the problem and its possible solutions (Dewey 2000; Jacobs and Kelly 2008; Kahn 1954; Nussbaum 1998; Krier and Ursin 1977). For the next few years there were several proposed bills that might have expanded the state's role in regulating air pollution, in particular from automobiles, but they failed to pass (Dewey 2000; Krier and Ursin 1977). Among the main concerns of lawmakers was the time and cost associated with inspecting roughly three million automobiles (Anon. 1958). Eventually, despite opposition and delaying tactics from the Automobile Manufacturers Association, Bill 17 passed in 1959, requiring the state to study and set statewide air quality standards (Hill 1959; Dewey 2000; Jacobs and Kelly 2008; Krier and Ursin 1977). The means by which this would happen became clear the following year with the passage of the California Motor Vehicle Pollution Control Act, which established the Motor Vehicle Pollution Control Board (MVPCB) within the California Department of Public Health. The objective of the MVPCB was to approve pollution control devices for automobiles which would then become mandatory, thus enabling the state to meet the air quality standards (Krier and Ursin 1977). No economically-feasible device reportedly existed yet, but in 1959 the Los Angeles County Board of Supervisors adopted a resolution recommending January 1, 1961, as the deadline for them to be required for drivers (Dewey 2000; Hammer 1960; Jacobs and Kelly 2008).

The fact that California would adopt a control technology on automobiles encouraged the automakers to use their own means of reducing hydrocarbon emissions (Dewey 2000). In late 1959, American automakers announced that they could eliminate a quarter of a car's emissions by capturing gases that normally vent out of the automobile and redirect them into the cylinders. These crankcase fumes attracted the attention of the

MVPCB and, following the release of new emissions standards in December 1960, they certified the first crankcase device for new automobiles in September 1961 (Becker 1961; Bennett 1961; Anon. 1961; Ingraham 1961; Krier and Ursin 1977). By 1964, even used cars could not be legally sold in California without these devices (Becker 1962; Dewey 2000; Jacobs and Kelly 2008; Krier and Ursin 1977). However, automakers did not initially comply, and instead negotiated with the MVPCB over the specifics of the emissions standards that a technological solution would be required to meet. Finally, in June 1964, the MVPCB announced that outside developers has created devices that would be required on all automobiles sold in California starting in 1966 (Krier and Ursin 1977). The automakers responded by announcing in August 1964 that they could achieve the same reductions with engine modifications, not tack-on devices, that would be ready on all 1966 models (Anon. 1967a; Anon. 1964; Dewey 2000; Hill 1965; Hill 1966a; Jacobs and Kelly 2008; Krier and Ursin 1977).

Around the same time, concerns arose among the APCD and the local anti-pollution interests it represented that the MVPCB was not aggressive enough in its tactics with the automakers. Dewey (2000, 71) describes the relationship between the two air pollution control entities as “total war” by the end of 1966, as the APCD director had argued that the state board's emissions control policy was a failure. Several policy implementation controversies had arguably caused the MVPCB to be unpopular (Krier and Ursin 1977; Dewey 2000). As Krier and Ursin (1977, 160–161) report:

Events in 1965-1966 made it clear that the MVPCB had slowly been maneuvered (or had maneuvered itself) into a position where it could do nothing right, where a step in any direction would bring cries of protest from some strong interest. In January 1965 it heard demands from one member of the Los Angeles County Board of Supervisors that the

county “withdraw” from MVPCB jurisdiction and that the legislature investigate its activities—all because the approved devices only increased pollution and imposed a tax on citizens.

Members of the MVPCB, in turn, argued that the APCD was trying to take attention away from the once again growing stationary pollution problem in Los Angeles County. During the 1960s, Los Angeles County began to adopt a more confrontational stance when dealing with auto pollution—understandable as the problem of auto pollution had worsened and economic development was being hampered by outward migration. Krier and Ursin (1977) claim that tension between the APCD and MVPCB was a manifestation of a more general tension between Los Angeles County and the state government over the relative contributions of stationary sources versus mobile sources on the area’s air pollution problem. The MVPCB, Dewey (2000) argues, was inherently friendly to these nationwide (non-local) interests. The cozy relationship involved, in 1965, the director of the board being hired for substantially more pay by the Ford Motor Company, and the chief engineer taking two trips to Europe paid for by European automobile manufacturers (Dewey 2000; Krier and Ursin 1977). By the late 1960s, the political leadership of Los Angeles no longer endorsed this cooperative approach of working with industry and claimed that the MVPCB was more of a hindrance than help (Jacobs and Kelly 2008; Krier and Ursin 1977; Dewey 2000).

As a result of these views, the MVPCB was abolished in August of 1967. The Mulford-Carroll Act replaced it with another agency for governing air pollution, called the California Air Resources Board (CARB) (Krier and Ursin 1977; Dewey 2000). Unlike its predecessor, it was given comprehensive authority over both mobile and stationary sources of air pollution throughout the state (Jacobs and Kelly 2008; Dewey

2000; Krier and Ursin 1977). Dewey (2000, 73) adds that the Act gave the CARB “the mission of adopting a more regional approach to air pollution control, establishing air quality basins and setting ambient air quality standards for those, but otherwise leaving control of stationary sources in the hands of local authorities as much as possible and threatening to intervene directly only in the event of local nonfeasance.” Furthermore, the new department had greater resources to conduct independent research (Krier and Ursin 1977).

By the time of the formation of the CARB, the federal government had indicated an interest in regulating auto emissions. However, knowing that any federal actions would be insufficient to address the air problems in California's urban areas, local and state interests lobbied for the passage of Assembly Bill 357, the California Pure Air Act of 1968 (Jacobs and Kelly 2008; Dewey 2000; Krier and Ursin 1977). The most significant features of this legislation are that it contained specific emissions standards required to be enforced by the CARB, increased the power of the CARB to set and enforce stricter standards, and enabled the state to test the emissions performance of new vehicles in use and on the assembly line rather than relying on self-reported information from the automakers. It also contained language about specific pollutants, namely, it requested that automakers further limit the emissions from hydrocarbons, carbon monoxide, and nitrous oxide. Furthermore, A.B. 357 made it state policy to give preferential treatment to low-emission automobiles when purchasing for the state fleet. The final bill signed in July 1968 made concessions to the auto industry on the issue of

nitrous oxide, but was otherwise a strong bill which tightened California's air pollution law, already the most stringent in North America (Hill 1968b; Krier and Ursin 1977).¹⁵

By the late 1960s, when the federal government became actively involved in air pollution governance, California had become the world leader in emissions abatement. It had contributed substantially to technological progress in abatement, led research into reducing emissions through gasoline formulation and, in the early 1970s, led the nationwide effort to require new automobiles to use unleaded gasoline (Dewey 2000).

1.1. Property-Based Interests and Smog Policy in California

In his study of the politics of air pollution in California during this period, George Gonzalez (2005, 69) shows that “the policy formulation process that established [California's] automotive emission standards can be most aptly characterized as a negotiation process between locally oriented economic elites and those national economic forces most closely associated with the automobile industry: automobile manufacturers, oil producers, and tire makers, etc.” In Los Angeles County, it was the *Times* that provided much of the energy necessary to advance air pollution governance in the area. Owned by the wealthy Chandler family (a major holder of real estate in Southern California), the *Times* initiated a campaign in 1947 to combat air pollution through government policy (Jacobs and Kelly 2008; Kennedy 1954; Lotchin 1992). One element

¹⁵ In addition to the provisions of A.B. 357, there are also indications that Californians sought novel technological solutions to these problems. Dewey (2000) reports that during the mid to late 1960s some legislators in California discussed the possibility of having internal combustion engines replaced by other power sources such as modern steam engines, fuel cells, or gas turbine engines. Also explored were early hybrid vehicles and battery-powered electric cars. In fact, Assembly Bill 356, had it passed, would have set emissions standards for state vehicles so low that it would have precluded the purchase of anything other than electric or steam-powered vehicles for twenty-five percent of the fleet (Dewey 2000; Hill 1968b).

of this campaign was a “public service” series on smog written by a veteran reporter. Jacobs and Kelly (2008, 28) observe that “Unmentioned in the series was how the landowning Times was servicing its own economic interests along with those of the hoi polloi.” In their historical account of Los Angeles’ experience with smog, these authors assess the *Times*’ influence the following way:

Southern California was an amorphous confederation of cities and interests devoid of Rockefellerian-institutions or clubby machine politics. “No one can force anybody down anybody else’s throat,” Chandler liked saying. Dubious as his premise was in a town were entities like the California Bank and the Merchants and Manufacturers Association called many shots, there was a transcendent truth to decentralized power—and an obvious downside to it. There was no central leader, no formidable bureaucracy. The *Times*, as the loudest voice around, was one of the world’s first environmental soldiers, and Chandler was its General Patton (Jacobs and Kelly 2008, 28).

To build a political consensus on the issue of air pollution abatement in Los Angeles, Norman Chandler formed the Los Angeles Citizens Smog Committee in 1947, comprised of various individuals interested in local growth, including the owner of the Huntington Hotel, the local Rotary Club president, and a member of the tourism-boosting All-Year-Club (Brienes 1975; Dewey 2000; Jacobs and Kelly 2008). When the *Times* brought in a pollution expert from St. Louis who recommended the creation of a county-wide air pollution authority, it was the head of this committee who met with oil company executives on May 19, 1947 to negotiate support for A.B. 1 (creating the APCD). Committee head William Jeffers not only succeeded in convincing representatives from Standard, Union, Texaco, General Petroleum, Shell, and Richfield (all members of the oil industry), to support the bill, but also had the same success a day earlier with

representatives of the major railroads operating in California (Kennedy 1954; Gonzalez 2005). During the entire process, the *Times* editorial department supported A.B. 1, even creating a newsletter on the topic which was distributed in the evening edition of the newspaper on May 17, 1947, and following it with a strongly-worded editorial the following day which was critical of the oil refining industry (Gonzalez 2005).

When the worsening pollution problem became apparent in the early- to mid-1950s, a policy-planning organization was formed, comprised of local elites and national interests. The Air Pollution Foundation examined studies on air pollution from many sources, including those from the auto manufacturers, oil companies, and nearby universities. It also co-organized colloquia and developed policy alternatives with the Los Angeles Chamber of Commerce. Together these groups coalesced around the problem area of auto exhaust and even sponsored studies on the possible contribution that it may have to smog. It was this organization that concluded that the automobile was a significant cause of smog, leading the auto industry to drop its position to the contrary (Gonzalez 2005; Hill 1955a; Krier and Ursin 1977; Anon. 1955j). This was followed in 1960 by the legislation requiring the installation of crankcase devices on all new automobiles. Indeed, the conference at which the crankcase device was announced was organized by the Los Angeles Chamber of Commerce (Becker 1961).

Property-based interests were also important in building support for 1968's Pure Air Act and securing the inclusion of at least one crucial feature of the law. Particularly important in generating support to pass the bill was Stamp Out Smog (SOS), a Los Angeles-based organization which Gonzalez (2005) argues was a property-based economic elite lobbying group. Krier and Ursin (1977, 188) report that SOS "helped

with mailings to urge attendance at hearings and stood in reserve to pack hearing rooms.” Furthermore, the meeting in which the bill was passed was “attended by hundreds of citizens bent on stricter automotive controls” due to the influence of the “Breath of Death” radio series broadcast in California (Krier and Ursin 1977, 188). Krier and Ursin state that this turnout influenced the legislators. Nevertheless, automobile industry representatives engaged in lobbying during the hearings, yielding some concessions in their favor. For example, a provision for window labels containing information about the exhaust expelled by an automobile was not included in the bill due to industrial lobbying (Krier and Ursin 1977). An attempt by the automobile industry to have the key provision for assembly-line testing removed, however, failed when “attacks from the press, television, and radio put it back” (Krier and Ursin 1977, 189).

As this case study illustrates, the County of Los Angeles was a central institution in the early political efforts to address air pollution in the United States. It is through the locality that policy was developed and research was funded. In this instance, the early history of the politicization of air pollution governance in the United States is one of property-based interests and the manufacturing and energy industries lobbying the government, directing policy, and channeling this through municipal and state governments. As illustrated below, this underlying reality of the American air pollution regime persists, albeit in a substantially altered form.

2. The Federal Clean Air Legislation, 1955 to 1990

The federal government's involvement with air pollution policy began with a round of statutes providing funding for research into the issue rather than setting standards or requiring emissions reductions. The first of these was the Air Pollution

Control Act of 1955, which granted \$5 million annually for air pollution research by the Public Health Service (Lee 1958). This was considerably less than was being spent to unravel the causes of smog in California. Furthermore, the statute was explicit in affirming the “primary responsibilities and rights of the States and local government in controlling air pollution,” (Anon. 1955a, 2) suggesting that federal government representatives articulated it as a local issue.

For several years after the Air Pollution Control Act passed, no substantive change occurred in federal intervention. Periodically the matter of vehicular emissions was considered in congressional hearings before the House Commerce Committee's Subcommittee on Traffic Safety, but with no change in policy. The 1960 Amendments to the Air Pollution Control Act merely extended the research funding for four more years. Beyond that, the Chair of the Subcommittee, Alabama Democrat Kenneth A. Roberts, was against the expansion of the federal government into an area that he expressed as being a state and municipal issue, as were the industrial interests which regularly lobbied against federal enforcement powers (Krier and Ursin 1977).

The biggest early threat to municipal and state supremacy in addressing air pollution was the effort of Ohio Senator Paul F. Schenck to regulate automobile pollution nationally in 1957. He proposed a bill that would have required the Surgeon General to set safe levels for auto emissions of hydrocarbons and banned the sale of any automobiles that did not meet those standards (Krier and Ursin 1977; Dewey 2000; Jones 1978). At the time, though, auto regulation had not yet occurred among the states (the MVPCB would not be established for two more years) so there is no reason to believe that the states had the political will to push it nationally. The bill faced industrial opposition and

did not make it through Congress, though in 1959 President Eisenhower did sign a modified Schenck Act which funded a two-year study on the possible relationship between automobile pollution and health, to be directed by the Surgeon General (Anon. 1959c; Jones 1978). This was reinforced with the 1962 Amendments to the Air Pollution Control Act which, in addition to reaffirming the original act, also called for the research to be done by the US Surgeon General, as described in the Schenck Act (Dewey 2000; Krier and Ursin 1977).

By 1963, however, air pollution had risen on the federal agenda. Charles O. Jones (1978, 36) has designated the period of 1960-1963 as the “problem-identification phase for federal air pollution policy action” and noted several indications of its enhanced prominence as an issue. Among these are the creation of a Division of Air Pollution within the Public Health Service, and the fact that the U.S. Conference of Majors and the American Municipal Association were lobbying for more federal intervention (Jones 1978; Krier and Ursin 1977; Dewey 2000). Dewey (2000, 239) refers to these groups at this point in time as an “urban lobby,” and notes that thirty-three states, plus the District of Columbia, supported the establishment of federal air quality criteria to serve as guidelines for states and localities in planning and instituting their own air pollution programs. A new Subcommittee on Air and Water Pollution headed by Maine Democratic Senator Edmund S. Muskie was formed within the Senate Public Works Committee, and hearings were held on the matter of air pollution (Dewey 2000). The resulting legislation, the Clean Air Act of 1963, was signed by President Johnson in December of that year. Gary Bryner (1995, 98) considers this statute “a very modest response to the initial concern in the nation about air pollution.” The 1963 CAA, like

those before it, lacked any guidelines or regulations, and instead funded air pollution research. The differences from the previous acts rest in the scope and target of the funding, as well as in the rhetoric addressing air pollution. First, it granted \$95 million over three years to state and local governments and air pollution control agencies, still a modest amount; second, the explicit target for the funding was for control technologies; and third, it stated that *interstate* air pollution needed to be reduced, and said that the funding should be directed at ways to reduce the spread of sulfur. Although this act contained no actual regulatory powers beyond what was exercised by individual states, it nevertheless can be understood as reflecting a concern about interstate air pollution which creates free riders in abatement efforts and damages local air pollution control measures. The act was also passed in the face of heavy industrial opposition (Jacobs and Kelly 2008; Jones 1978).

The 1963 CAA was clearly not enough for the states suffering from interstate air pollution. After it passed, Muskie, whose state of Maine is one of those which suffer the most from interstate air pollution drift, had his subcommittee hold field hearings in various cities around the country to see if the new law met their needs (Krier and Ursin 1977; Dewey 2000; Jones 1978). The result was that many localities indicated a need for regional air pollution agencies and auto exhaust controls. The automakers at the time indicated that they agreed with the need for such controls, and that they should vary by state and locality. Krier and Ursin (1977, 174) report that “Muskie was surprised; a uniform requirement, he thought, would be the most advantageous to the industry.” Dewey (2000) maintains that this was a bluff by the automakers since what they really wanted was no regulation at all, and hoped that this could be achieved by avoiding

national controls. Muskie argued that the position of the automakers made no sense and said that California's system of controls should be a model for the nation.

In January 1965, Muskie introduced an amendment to the 1963 CAA which would establish national automobile emissions standards identical to those in California (Jones 1978; Dewey 2000). As with the previous legislation, this was supported by representatives of various localities, in particular the U.S. Conference of Mayors and the National Association of Counties (Dewey 2000). The automakers lobbied against the amendments, but when it became likely that New York State would adopt California motor vehicle emissions standards, the auto companies realized that they had nothing to gain by fighting them (Dewey 2000). As Krier and Ursin (1977, 175) put it, “The diverse standards the industry feared the most appeared to be imminent; in that light, uniform federal standards, hardly better than nothing, were nevertheless the easiest road.” Given the size of the auto markets of these two states, it would be more economical for them to make only one version of each car model. In April 1965, the automakers agreed to the regulations in the proposed legislation, announcing that they would meet California emission standards for 1966 models for all models starting with the 1968 model year (Hill 1966e; Hill 1966a; Hill 1967b; Jacobs and Kelly 2008; Lee 1958). Muskie's CAA amendment, the Motor Vehicle Pollution Control Act (MVPCA), passed and was signed by President Johnson in October 1965. The MVPCA gave regulation issuance and enforcement responsibilities to the Air Pollution Control Administration, a new entity within the US Department of Health, Education, and Services (Krier and Ursin 1977; Dewey 2000). The MVPCA also contained rhetorical language about the problem of transboundary air pollution and its detrimental effects on Canada and Mexico.

The following year, the federal government's emissions standards were formally issued. The MVPCA goes down in history as the first act of air pollution regulation of the US federal government. Left unanswered were important questions about the rules of the development of the various state regimes—questions such as whether the standards were absolute standards or minimum required emissions standards for states, and whether states could issue regulations exceeding them (Hill 1966b; Hill 1966c; Jones 1978). The automobile industry openly supported the federal preemption of state standards. The president of the Automobile Manufacturers Association, Thomas C. Mann, said in testimony before Muskie's subcommittee: "A multiplicity of differing State standards would create chaotic conditions in this Nation's largest industry with all that this implies. . . . Federal preemption is, in our opinion, necessary to prevent the development of differing or conflicting State standards" (quoted in Jones 1978, 68). This question became an issue shortly thereafter, when the initial standards were issued, because the APCD and MVPCB had been planning to again raise California's auto emissions standards. Officials at the APCD felt that the existing standards were not high enough to stop the worsening of the state's air, let alone restore the quality to their objective of 1940 smog levels (Hill 1967a; Hill 1968b; Jacobs and Kelly 2008; Jones 1978). The uncertainty was so great that an official at the federal Air Pollution Control Administration indicated that the issue might have to be solved by a legal test case (Dewey 2000).

In the meantime, in early 1967, Muskie's subcommittee held hearings for what became the Air Quality Act of 1967, addressing the transport of stationary air pollution from locale to locale. Krier and Ursin (1977, 180) report: "The hearings revealed strong

industry opposition (especially from the coal and oil lobbies) to national emissions standards, but rather surprising support from state, county, and municipal organizations.” Under this statute, the Secretary of Health, Education, and Welfare was assigned the task of dividing the country into Air Quality Control Regions within which states would create State Implementation Plans (SIPs) to address the pollution problems that led to the assignment. These states were left with the responsibility of setting their own air pollution standards, although the Secretary was authorized to step in and set emissions standards if the states did not act promptly to set them. Furthermore, reflecting concern about the interstate transport of air pollution, the Secretary could also establish an Interstate Air Quality Planning Commission to facilitate the abatement process where air pollution problems overlapped states and the states did not act (Blair 1967b).

Nevertheless, the federal government had extremely limited enforcement powers, thus the abatement measures had to be entirely state directed (Anon. 1967b; Krier and Ursin 1977). In addition to these provisions, there was also continued funding for air pollution control, this time \$428 million over three years (Anon. 1967b; Krier and Ursin 1977).

California officials used hearings for the proposed statute as their means of expressing their concerns about the auto emissions standards of the 1965 MVPCA (Krier and Ursin 1977). They argued for the establishment of federal national minimum vehicle emissions standards that states could exceed if necessary (Hill 1967a). The automakers were against this, contending that the national standard should be universal. California Republican Senator George Murphy responded to local interests by drafting an amendment stating that California could get an exemption if it were able to show that the pollution problem there was sufficiently severe. This version of the bill passed the

Senate (Krier and Ursin 1977). However, in the House version, Michigan Congressman John Dingell from Detroit submitted an amendment authored by the Automobile Manufacturers Association which deleted the Murphy amendment (Dewey 2000; Jacobs and Kelly 2008; Krier and Ursin 1977). This version passed in committee. The action provoked a vocal negative response from California representatives as well as members of the APCD , the MVPCB, and the listeners of the “Breath of Death” radio series mentioned above (Jacobs and Kelly 2008). The air pollution control officials from California even visited Washington and provided expert advice to California legislators (Dewey 2000; Krier and Ursin 1977). In the end, the California officials were able to restore the Senate-approved right to set more stringent limits (Blair 1967a; Jacobs and Kelly 2008). At the signing ceremony for the bill, President Johnson said, “Senator Muskie has been shoving me like no one else has on air pollution” (Reed 1967, 29).

The final attempt of California officials to enlist the help of the federal government before the 1970 CAA was an effort to hold the automakers accountable for violating federal antitrust law in preventing and delaying the introduction of antipollution devices. With the encouragement of APCD officials, a federal grand jury was convened in July 1967 to investigate (Dewey 1998; Jacobs and Kelly 2008). The grand jury wanted the automakers indicted on both civil and criminal charges, and forwarded its findings to Attorney General Ramsey Clark in late 1967. The Johnson Administration did not address the matter until January 1969, shortly before President Johnson left office (Dewey 1998; Jacobs and Kelly 2008). At that time, the major American automakers were civilly charged with violating the Sherman Antitrust Act. California and Los Angeles officials asked to join the federal action and were denied, though they did file a

\$100 million suit against the automakers with the hope of recovering the money spent since the early 1950s fighting air pollution and dealing with its health-related effects (Jacobs and Kelly 2008). In the months following the initiation of the federal action, the automakers lobbied the new Nixon administration to reach a settlement (Dewey 1998). In September 1969, just this happened, as the automakers agreed to not conspire to prevent the development of new emissions prevention technology and to make the patent licenses on their air pollution control equipment royalty free (Dewey 1998; Jacobs and Kelly 2008; Krier and Ursin 1977). They did not have to admit any guilt, and critics in the US House and Senate, as well as consumer advocates, complained that the Nixon Administration gave into industry pressure. However, unlike the federal government, many of the states were more concerned with representing local landed interests than national interests that were not directly implicated in the growth of their urban areas. New York State and New York City both filed antitrust suits in late 1969, with the former's requesting that the automakers install pollution control equipment in all 6.7 million vehicles in the state at the automakers' expense (Anon. 1969). In all, twenty-eight states (including several New England states) and numerous cities and counties filed similar suits asking the automobile companies to take additional measures to eliminate smog and make large contributions toward the establishment of mass transit systems. Thirty-four of the suits were dismissed in November 1973, with the judge arguing that this type of regulation did not fall under common understanding of antitrust law (Anon. 1973b).

2.1. Clean Air Act of 1970

In the few years after the passage of the 1967 Air Quality Act, it was clear to the activists in the US Congress that further amendments were necessary to the air pollution regime. By 1970, no state had established a complete set of standards for any pollutants and the federal government had only established a third of the Air Quality Control Regions that it was expected to (Bryner 1995). In addition, with the recent creation of the EPA, a decision needed to be reached as to whether to give it the capacity to set new vehicle emissions standards or whether to write them into law.

Muskie was rumored to be a candidate for the Democratic Party's ticket in 1972, so President Nixon made the legislation part of his domestic policy platform and introduced the Administration's version of the bill in February (Bryner 1995). The automobile industry lobbied against emissions standards written into the law, favoring that the EPA set the standards. They also fought against the proposed tailpipe standards, arguing, as they had many times before, that the technology to meet these standards did not exist. Senator Robert P. Griffin of Michigan, representing the automobile interests, said that the Congress was “hold[ing] a gun at the head of the American automobile industry in a very dangerous game of economic roulette” (quoted in Bryner 1995, 99). The Senate version of the law, reported out of committee in September 1970 and led by the efforts of Edmund Muskie, was stricter than the versions the House or the Nixon Administration had proposed (Krier and Ursin 1977). Many of the Senate's provisions, including auto regulations and provisions to sue polluters and the EPA for the enforcement of non-compliance, were included in the final bill, which passed in December 1970 (Bryner 1995).

The CAA of 1970 contained four main components (Anon. 1970; see Klyza and Sousa 2008, 135–136 for a discussion). The first and primary part was that the EPA would establish National Ambient Air Quality Standards for the major prevalent air pollutants. These pollutants were particulate matter, sulfur dioxide, nitrogen dioxide, volatile organic compounds, carbon monoxide, and lead. Similarly, it also authorized the EPA to establish national standards for toxic or hazardous airborne pollutants. The remaining three components addressed how these standards would be met. For mobile sources, the CAA mandated ninety percent reductions of carbon dioxide and hydrocarbons from 1970 levels beginning with the 1975 model year, and a ninety percent reduction in nitrous oxide from 1971 levels beginning with the 1976 model year. The EPA was given authority to regulate fuel additives, test new vehicles for compliance, and set standards for air pollution control device warranties (see Bryner 1995, 101). Stationary sources were addressed with New Source Performance Standards (NSPS), which would be established for new factories and power plants. Congress decided not to regulate existing power plants and factories since pollution control techniques would be costly and it was assumed that they would be retired and phased out within ten to fifteen years (see Klyza and Sousa 2008, 135). About NSPS, Morag-Levine (2003, 16) explains that “The primary regulatory objects of these standards were industrial categories to be listed by the EPA, rather than particular pollutants, and the standards were to be based on levels of reduction achievable through already available means of pollution control.” Lastly, the program of requiring states to submit SIPs would be maintained from the 1967 Air Quality Act, but this time used in conjunction with enforceable standards. States were required to be in compliance with the SIPs by 1975, with two years of extensions

available, and funds were made available to states for the development of SIPs and research into the health effects of airborne pollutants.

At the time that it was passed in 1970, the CAA was not hailed with much fanfare in the American media. But since then, an appreciation for its scope has emerged. Klyza and Sousa (2008, 169), for example, write that beginning in 1970, “National Ambient Air Quality Standards . . . have been the foundation of air pollution policy in the United States,” while Morag-Levine (2003, 1) says that the CAA “is broadly understood as a pivotal moment in the history of U.S. environmental policy, entailing a radical shift away from an earlier common law regime that operated piecemeal by local and state governments.”

However, skeptics argue that the promise of the CAA was never realized. For the first forty-plus years (1963 through the late 2000s) that the CAA has existed, its record is that it has likely had minimal effect on pollution levels in the United States. Deadlines for compliance with SIPs by states and auto regulations by the automakers were extended on a near-annual basis throughout the 1970s, with some of the only substantial reductions (in lead emissions) occurring with the switch to unleaded fuel (Bryner 1995). Morag-Levine (2003) sees this failure as a result of the America's nuisance law legacy, which still influences the way that regulations are determined and implemented. Similarly, Gonzalez (2001) shows that both the governance by the EPA based on the CAA, as well as the actual pollution reductions that the regulations have achieved have been minimal. By the time the 1990 amendments were passed, the EPA had set NAAQS for only seven toxic air pollutants: asbestos, benzene, vinyl chloride, beryllium, mercury, radionuclides, and arsenic. Furthermore, it is not clear that the CAA brought about much of a reduction

of the substances that were designated. Of the six NAAQS-designated pollutants, only particulate matter and lead had been substantially reduced from 1970 to 1990, nitrogen dioxide increased, and the remaining three stayed at about the same levels. Based on these findings, on the fact that industrial business interests were heavily involved in the development of the legislation, and on the observation that the CAA has been heavily violated by polluting states, Gonzalez (2001) suggests that the CAA has served businesses by lowering their costs and enhancing regulatory predictability, while doing little or nothing beyond what the states would have otherwise done to abate air pollution.

Furthermore, the primary means by which the enforcement of stationary source emissions (under New Source Review) happened was through the legal intervention of US states attempting to limit the emissions transported to them—and this matter was not settled until 2007 (discussed below). Until then, most direct regulation of power plants occurred on a local or statewide basis, without the involvement of the federal government.

2.2. The Creation of the 1990 Clean Air Act Amendments

Following the passage of the 1970 CAA, several amendments were passed throughout the 1970s which provided waivers for meeting auto emissions standards, extended deadlines for states complying with NAAQS and, in the case of the 1977 Clean Air Act Amendments (CAAA), established technology-based standards for stationary sources and limited the construction of new stationary sources in areas not complying with NAAQS (discussed below) (Bryner 1995; Melnick 1999; Klyza and Sousa 2008). Following the 1977 CAAA, leadership changes in the federal government favored industrial interests over the property-based interests trying to strengthen air pollution

standards (Bryner 1995). In particular, Robert Byrd of West Virginia, an ally of his state's coal industry and opponent of most air pollution regulation, ascended to the majority leadership position in the Senate in 1977 and, serving as minority leader for part of the 1980s as the Republicans gained control of the Senate in 1981, remained majority leader until 1989. During the 1980s, many air pollution bills proposing stricter regulations on stationary sources reporting out of committee were never brought to the floor for a vote by Byrd (Hepburn 1986b; Simpson 1985). Most important, however, was the leadership of President Ronald Reagan from 1980 through 1988. Reagan maintained an ideology of limited government intervention, which translated to attempts to relax air pollution standards on automobiles and stationary sources. These standards were not officially relaxed, but neither was there much new law governing air pollution during this period. Instead, EPA administrator Ann Gorsuch (Burford) reduced the agency's operating budget by twenty-two percent in the early 1980s and tried to work with industry to find ways to reduce air pollution rather than have the EPA pursue aggressive enforcement strategies (Sullivan 2004).¹⁶ This strategy by the EPA persisted throughout the Reagan presidency, and the associated lack of trust between the legislature and the executive that would not enforce existing air pollution statutes was an insurmountable barrier for any substantial legislative action on air pollution during the 1980s (Bryner 1995).

¹⁶ To quote Gorsuch Burford's *Washington Post* obituary, written by Patricia Sullivan (2004, B06): "Republicans and Democrats alike accused Ms. Burford of dismantling her agency rather than directing it to aggressively protect the environment. They pointed to budgets cuts for research and enforcement, to steep declines in the number of cases filed against polluters, to efforts to relax portions of the Clean Air Act, to an acceleration of federal approvals for the spraying of restricted pesticides and more. Her agency tried to set aside a 30-by-40-mile rectangle of ocean due east of the Delaware-Maryland coast where incinerator ships would burn toxic wastes at 1,200 degrees centigrade."

Too much scholarship has been written about the politics of the 1990 CAAA already in the twenty years since it passed for it to be worthwhile to give an exhaustive summary or political history here (for notable examples see Bryner 1995; Cahn 1995; Munton 1998; Gonzalez 2001). Existing accounts focus on the political window that opened when public opinion changed in favor of the legislation and the Senate Majority Leader changed to George Mitchell (Bryner 1995; Cahn 1995). Matthew Cahn's (1995, 61–62) analysis concludes that the 1990 CAAA is largely symbolic. He argues, “because of the highly complex technologies involved in environmental improvement, [President] Bush was able to present the 1990 Clean Air Act [Amendments] as a promise to clear the air, while in fact reinforcing a commitment to business as usual.” Gonzalez (2001) takes this a step further, arguing that a central motivation behind the 1990 CAAA was the objective of industrial interests to preempt abatement activities within the states and localities. By this time, municipal and state politicians were enacting their own programs aimed at enforcing and strengthening air pollution standards. According to Gonzalez (2001), this threatened to Balkanize the nation's air pollution regime, so that different standards in different states would increase costs for polluters.

Several local and statewide initiatives taken or proposed during the late 1980s are worth noting. In 1989, a dozen jurisdictions from Phoenix to Chicago required changes in the composition of house paint and lacquer to reduce air pollution, leading the paint industry to lobby Congress for national standards to create a stable policy environment (Wald 1989e). That same year, the chemical industry held a conference in Washington DC on the issue of state and local regulations. Margaret Kriz (1989) documented how, at

that event, representatives of the industry voiced their concern over the actions of trendsetting state and their support for national legislation to halt the trend.

The Northeast states announced in March 1989 that they would require fuel sold in this region to meet stricter standards for ground-level-ozone-causing emissions. At issue was the volatility of gasoline, which is a measure of the speed at which gasoline turns to vapor. The higher the speed, the easier it is to start an automobile (especially in cold conditions), but the more excess vapor escapes unburned (as hydrocarbons) leading to ozone formation. Volatility is measured in terms of Reid Vapor Pressure (RVP), with higher numbers indicating a greater tendency for gasoline to vaporize. The Northeast states' rule would have required a RVP of 9 from May 1 to September 15 of each year. Unregulated, the gasoline industry had set the level at 11.5 in the summer months. In response to the proposed rule, the industry pursued several avenues to prevent it. Predictably, a spokesman for the Mobile Corporation said it would lead to “substantial price increases”; the American Petroleum Institute (the main trade group for the oil industry) sued to stop the rule from taking effect in New York; and the same group lobbied the EPA to create a less strict rule to preempt the state rule (Wald 1989a, A1). Matthew Wald (1989c, E5) of the *New York Times* reported:

In Washington, where the oil companies are strong, the Environmental Protection Agency resisted imposing rules on gasoline evaporation. When states acted on their own, the E.P.A. responded with a much less stringent requirement [of a RVP of 10.5 in the summer months]. Only after Massachusetts threatened to sue did Washington begin approving the states' rules.

Beginning June 30 of 1989, the Northeast states were able to begin requiring the reduced-RVP gasoline (Wald 1989b; Wald 1989c). At this point, Wald (1989c, E5) observed

what had become a trend, namely “a new twist on Federalism: the states cajoling Washington to permit them to confederate.”

Emboldened by this victory, representatives from the states began meeting to discuss other regional measures to reduce air pollution. According to Wald (1989c), these included adopting California's tailpipe standards for auto emissions and creating rules for the formulation of ozone-causing household products such as hairspray, house paint, and deodorant. The commissioner New York's Department of Environmental Conservation (NYSDEC), Thomas Jorling, spoke openly to the media of his support for the Northeast's adoption of California's automobile equipment rules, which would lessen tailpipe emissions. The executive director of Northeast States for Coordinated Air Use Management (NESCAUM), an arm's-length non-profit organization used by Northeast states to formulate fuel standards, Michael J. Bradley, said of these proposals that they were “a response to the lack of progress in the previous eight years” during the Reagan administration, and that several Mid-Atlantic states were considering joining the efforts of the Northeast states (Wald 1989c, E5). And during the summer of 1989, the Northeastern states did indeed modify tailpipe emissions standards to match those in California, meaning that roughly a quarter of the nation's automobile market would be required to buy the cleaner automobiles (Wald 1989d).

As the states and urban areas were pursuing strategies to reduce air pollutants in spite of the EPA, industry used the window presented by the federal clean air negotiations as an opportunity to press for major federal legislation that would create more predictability and potentially less stringent standards in the nation's air pollution regime. A notable example of this is the way in which automobile emission standards

were determined. The House subcommittee that wrote the auto emissions standards was the House Health and Environment Subcommittee, chaired by Henry Waxman of California. However, it was dominated not by Waxman, but by a group of moderate Democrats who were part of the bipartisan coalition controlled by John Dingell of Michigan (Bryner 1995; Gold 1989; Gonzalez 2001; Weisskopf 1990a). Waxman had wanted standards even tighter than the then-present California standards, but the compromise reached by the subcommittee was that the national standard would equal the California standards beginning with the 1994 model year (Hager 1989; Wald 1989e). This made economic sense for the automakers since it meant that they would not have to potentially produce several different automobiles. It was especially important given that California would soon tighten its emissions standards even more, in September 1990 (Matthews 1990). Had the national emissions standards not caught up to the Northeast states' standards, this would have entailed the production of three different automobiles. Indeed, the legislation contained a "no-third vehicle" clause preventing states from adopting standards other than the California and national standards.

The House subcommittee also drafted the legislation on gasoline formulation. (This is a separate matter from the RVP fuel emissions issue discussed above, as the issue here about gasoline formulation relates to how cleanly it burns, not how fast it evaporates). The oil industry was highly influential on this part of the legislation, and the Bush administration opposed the mandated formulation of gasoline. As a result, the legislation indicated that the industry would determine how to meet the new fuel emissions standards (Pytte 1990; Wald 1990; Weisskopf 1990b). These standards were

mandated for gasoline sold in the United States' nine most polluted cities, including most of Connecticut.

Industrial lobbyists, represented by the Clean Air Working Group, were generally pleased with the legislation, while the mainstream environmental non-governmental organizations were critical (Cahn 1995; Gonzalez 2001; Weisskopf 1990c). In general, the politics over the 1990 CAAA show that the US air pollution regime is not guided by federal representatives seeking to protect human health and the environment; rather, it is a result of the competition between industrial interests (and the politicians who represent them), and localities. These localities are represented by state administrators, attorneys general, and elected federal representatives accountable to local interests. The result, in the 1990 CAAA, is legislation that strengthens auto emissions standards, but perhaps not more than they would have been strengthened otherwise by the actions of states and the auto industry. As such, it appears that Cahn's (1995, 64) assessment of the act as “largely symbolic” contains a degree of accuracy, as it “sought to satisfy public demand for strong clean air policy while maintaining a commitment to traditional Liberal concerns for economic growth.” Furthermore, apart from the automobile standards, the 1990 CAAA arguably did little to address the specific problem of acid rain in New York.

2.3 The Sulfur Dioxide Trading Program and Acid Rain

The feature of the 1990 CAAA that has received the most attention as innovative and as a break from the previous versions of the statute was the creation of a market for tradable sulfur dioxide permits. Acid rain, caused by sulfur dioxide, had been receiving increasing attention by scientists, policymakers, and the popular media since the late 1970s. Tighter controls on sulfur dioxide would allow the federal government to declare

that it had taken substantial measures to address this problem. Under the cap and trade system, power plants received a number of pollution allowances in pursuance of a target for total annual emissions. These allowances could be sold to other power plants and utilities if unneeded, or a power plant could buy them as necessary to cover its emissions. The total number of allowances available each year was capped, thus limiting the total release of sulfur dioxide among all power plants. Allowances not used during a given year could be “banked” for use in a future year (see Ellerman et al. 2000; Melewski 2002; Munton 1998).

The section of the 1990 CAAA containing the sulfur dioxide trading program is also unique in that it was largely written by an environmental NGO, the Environmental Defense Fund (EDF) (Ellerman et al. 2000). If effective in preventing acid deposition in sensitive areas, this would be a striking example of environmental NGO influence in the policymaking process. This is especially true considering that the House committee primarily responsible for drafting this portion of the statute consisted mostly of representatives from states that would be negatively economically affected by it (Ellerman et al. 2000). However, as several authors have observed, the EDF is more aptly considered an elite-led policy planning network, as it has several corporate executives on its board of directors and receives funding from foundations (Dowie 1996; Gonzalez 2009). Mark Dowie and George Gonzalez describe the EDF as a conservative business-friendly organization which generates policy proposals for economic elites who participate in organizations such as this to learn about environmental issues.¹⁷ As

¹⁷ Dowie (1991, 72) distinguishes between environmental groups that regularly work with Congress and corporations, such as the EDF, the Sierra Club, the Audobon Society, the National Wildlife Federation, and the Wilderness Society, on the one hand, and, on

discussed below, a sulfur dioxide cap and trade system is something the EDF promoted for many years and was successful in influencing the creation of in New York years earlier.

Numerous studies have assessed the effectiveness of the federal sulfur dioxide trading program and the economic and political processes that led to its creation and affected its implementation. In short, the trading occurring under the system was less than expected because power plants were able to comply inexpensively by switching to low-sulfur coal. Don Munton (1998) has argued that the transition to low-sulfur coal was taking place before the legislation was created, and thus much of any sulfur dioxide reductions would have happened anyway. Moreover, a comprehensive study released ten years after the 1990 CAAA suggested a mixed record of success (Ellerman et al. 2000). Regardless, what is of interest for this dissertation is the extent to which the 1990 CAAA acid rain program represents an example of top-down environmental governance (with, interestingly, NGO support) which complements or supersedes the efforts of state governments, or whether it actually obstructed the efforts of the states with property-based interests damaged by acid rain to effectively address the problem. Both of these

the other, those that “distrust the federal government and define [their activities] as conducting, supporting, or advocating direct action against offending industries.” Environmental groups of this latter type include Greenpeace and Environmental Action. The purpose behind discussing the EDF’s role in the 1990 CAA is not to criticize it or show that it has been unimportant (as the opposite is true). Rather, it is to provide context for what follows, as the EDF was influential in the formulation of New York’s acid rain program, which served as a precursor to the national program. As a national (not property-based) environmental pressure group, the EDF does not necessarily share the policy objectives of politicians or civil servants trying to protect specific areas of land (such as the Adirondack Park) and tend to be more interested in broader objectives of environmental governance. In the case of the EDF and New York, this objective was arguably getting a “foot in the door” for the emissions trading concept, which it could perhaps later push attempt to expand on a national basis (as it did with the 1990 CAAA).

are likely true to some extent but, as the story of the acid rain governance in New York State shows, the latter dynamic was present during the 1990s.

3. New York State and Acid Rain and Smog, 1980s to Present

Since the passage of the 1990 CAAA, no new air pollution legislation has passed Congress, yet no small amount of policy action has occurred. Klyza and Sousa (2008) have observed that, given Congressional gridlock, environmental policy has found other means of evolving. In particular, they show that litigation and rulemaking have taken on an increased importance. This section explores this idea further by tracing the evolution of the issue of acid rain in the United States before and during Congressional gridlock. It shows that litigation and rulemaking are important, but that these processes were underway before 1990 and that the specific political actors pushing for these measures have been doing so since the 1980s and earlier. More specifically, this case study shows that the property-based interests of the Adirondack Park—a region in the United States among those suffering the most ecologically and economically from the effects of acid rain—were the source of much of the political will to address the problem. What has gradually but significantly changed since the creation of the Clean Air Act of 1970 is not where the motivation to address air pollution originates, or who are the most important actors, but rather the institutional mechanisms through which they exercise influence. As is illustrated below, property owners in Upstate New York, through their support of the region's most powerful conservation group and the actions of their elected officials, have been able to affect the way power plants are regulated in Ohio, Missouri, and other Midwestern states.

The Adirondack Park is a publicly protected area in Upstate New York. Consisting of over six million acres, it is larger than any New England state except Maine. More than half of this land is privately owned, and is used primarily for forestry and recreation. The Adirondack Park contains over 10,000 lakes, 30,000 miles of streams and rivers, and over 2,000 miles of hiking trails. Its permanent population lives in 103 small villages and has been stable at 130,000 for decades. On top of that, the Adirondack Park experiences an influx of about 200,000 or more seasonal residents who work there during the tourist season and an estimated nine million tourists annually (McMarin 1990; Sheehan 1998).

During the late 1970s and early 1980s, it became increasingly clear to scientists and policymakers that the acid rain problem was serious. A survey of over 1,000 lakes from 1975 to 1982 indicated that nineteen percent were too acidic to support aquatic life (J. P. Baker and Schofield 1982; Cronan and Schofield 1979; Schofield and Driscoll 1987; Schofield 1976). Further studies provided more extensive data and clarified the extent of the problem. As Gary Randorf (2002, 115) reported in the early 2000s:

Between 1984 and 1987, more than 1,460 Adirondack lakes and ponds were surveyed. Three hundred fifty-two were pronounced dead, having a pH of 5.0 or less, the critical level below which most species of fish and other aquatic life cannot survive. Another 269 were found to be endangered (pH between 5.1 and 6.0); many of these are expected to die as their buffering capacity (ability of the underlying and surrounding rocks and soils to neutralize acidity) is used up. The majority of these more than six hundred critically acidified and endangered lakes are fishless, almost lifeless.

In addition to the deposition occurring on a continual basis as precipitation falls into the lakes and streams, every spring the Park experiences “acid shock” as the acid from winter

snowfall melts and becomes absorbed. During and following the acid shock, up to nearly sixty percent of the Park's lakes have been found to have a pH level too high to sustain fish and other native aquatic life (Sheehan 1998). Other studies yielded even more alarming results. In a 1998 report, the EPA found that nearly half of the Adirondacks' lakes will be too acidic to sustain life by 2040, and that nearly all of the streams will be in the pH critical zone for most of the year (United States Environmental Protection Agency 1998).

Yet by the late 2000s and early 2010s, the acid rain problem had improved substantially, to the point that the region was predicted to steadily improve for the foreseeable future. Litigation led by New York State to enforce the CAA had resulted in large settlements with power plant owners and provided the political opportunity for the Clean Air Interstate Rule of 2005. This rule was struck down by a federal court in 2008, but later reinstated the same year but with the requirement that it be amended to address air pollution transport across state boundaries. In 2011, it was replaced by the Obama Administration's Cross-State Air Pollution Rule (CSAPR). The CSAPR requires seventy-three percent sulfur dioxide emission reductions and fifty-four percent nitrogen oxide emissions reductions from 2005 levels from power plants in twenty-seven states—including all of the heavy polluters of the American Midwest (United States Environmental Protection Agency 2012). So monumental was this new rule that the Adirondack Council stated in its annual "State of the Park" publication that it "will bring a halt to acid rain damage in the Adirondack Park and beyond, giving the Park's fish, forests and wildlife a change to recover their health and vitality" (Adirondack Council 2011, 13). The organization communications director similarly commented, "there is less

and less to complain about year by year. The park is getting healthier, there have been hopeful signs with some of the things that are being done by local governments, and we hope that all of the upward economic trends continue” (quoted in Lobdell 2011).

The resolution to the acid rain problem in Upstate New York is the result of a decades long struggle between conservationists and property owners in New York, the elected officials that represent them, and the owners of coal-fired power plants. In pursuing their policy objectives, these actors have used lawsuits and direct lobbying to gain influence through the channels available to them through all three branches of government. What began as a regional problem affecting a relatively small number of people in a large and influential state went on to become a matter of national policy as science made it clear that the problem had external causes, and as the property-based interests of the Adirondacks organized to influence their elected leaders to address the problem at the source.

The account of how acid rain in the Adirondacks went on to influence national policy, and the implications of the CAA’s existence in this process, is organized into three sections. First, this chapter section presents a historical overview of the earliest legislation and litigation aimed at addressing the matter. New York’s public officials tried to address the problem on all fronts—by passing state legislation, negotiating with the state’s utilities, proposing legislation in the US Congress, and suing the EPA over rulemaking or for the release of acid rain studies. Next, this chapter section discusses two of the most consequential air pollution litigious efforts of the 1990s, namely, the lawsuits over New Source Review from the late 1990s and extending into the mid-2000s; and *Massachusetts v. EPA*, the case over the interpretation of the CAA in terms of

whether it requires the EPA to regulate GHG emissions. These court cases underscore the fact that the CAA has made the US air pollution regime more interconnected, so that litigation originating in one part of the United States (here, the Northeast) can affect the regulations that power plants in another part of the country operate under. They also point out that the political will to address air pollution does not originate in the EPA, rather, it rests with the actors who jockey for influence over this agency and its regulations. The final subsection discusses the political behavior of the Adirondack Council, one of interests that proved to be important in the governing of air pollution in the Northeast. As it shows, this property-based interest group lobbied state and federal representatives, worked to arouse the concern of the broader public, framed scientific evidence in its publications, and worked closely with civil servants in Albany to address the problem of acid rain. It is due in no small part to the efforts of the Adirondack Council that the political will necessary for New York to take such extensive abatement measures found expression.

3.1. New York's Acid Rain Legislation and Litigation

Similar to Ontario during the middle of the 1980s, New York passed acid rain legislation in 1984. The Acid Deposition Control Act of 1984 (ADCA) was the first state statute aimed at addressing the problem. It specifically targeted power plants operating within New York State. The law required that the NYSDEC develop a plan to achieve a specified reduction of sulfur dioxide from 1980 levels and nitrogen oxides from new sources by 1988. Further reductions were required to be formulated and achieved by

1991 in the event that the federal government did not implement a program achieving the reductions consistent with state law.¹⁸

Interestingly, the largest controversy surrounding the legislation was not opposition from the utility companies. The potential economic benefits of controlling acid rain were too substantial and the interests that pushed for this were too well organized and effective. Rather, it related to demands of the EDF, the NGO that would go on to author the cap-and-trade program under the 1990 CAAA. As former Adirondack Council President Bernard Melewski (2002, 177) reports, “The EDF saw an opportunity to gain an important foothold for the new emissions trading concept, which is strongly promoted.”¹⁹ The NYSDEC, while openly supporting the new law, opposed a cap-and-trade system. Apart from being untested at the time, this type of system does not, in itself, address the problem of differential needs in sensitive receptor areas (such as the Adirondacks, Catskill Mountains, and so on). Ultimately, however, the final legislation included the cap-and-trade program, but with the stipulation that the allocation of credits would account for the environmental sensitivity of the region in which particular power plants were located (New York State 1984). More specifically, the distribution of offsets was required to be deposition neutral, so that power plants in the Adirondacks, for example, would not be able to buy permits enabling them to pollute more than they already had. This command-and-control feature of the law is in

¹⁸ In 1987, the New York State Senate passed a law exempting power plants in Nassau County and Suffolk County (both in Long Island and far away from the Adirondacks) from the ADCA, and allowing them to use high-sulfur coal. Regans and Rycroft (1988) report that this was in response to constituent demand to hold down electricity rate increases.

¹⁹ As Robert Stavens (1998, 77) notes, the EDF’s pursuance of allowance trading was a tactic used to distinguish itself from other NGOs and enhance its reputation as a pragmatic organization willing to work with industry.

opposition to the free market principles of a cap-and-trade system, creating a tension which continued to play out for many years.

This tension became especially relevant when the 1990 CAAA was developed. During the required review of the ADCA by the NYSDEC to determine whether the 1990 CAAA was consistent with state law (thereby deciding whether new state reduction targets would be set), NYSDEC Commissioner Thomas Jorling expressed concern that the implementation of the law would not include provisions for deposition neutrality in sensitive receptor areas. As the 1990 CAAA did not include any language suggesting it should, the concern was that the new law may actually enable power plants in these sensitive regions to pollute more than they could under existing New York law. And indeed this is what happened. Despite the opposition of the New York government and other interest groups, the regulations issued in early 1993 contained no special limits on the credits power plants in sensitive receptor areas could collect (Randorf 1998).

The New York government (along with the Adirondack Council and the Natural Resources Defense Council) responded with a petition challenging these rules. Among the thirteen issues raised in the Statement of Issues were the assertions that the EPA should not ignore the impacts on sensitive areas when establishing the trading system, and that it should not prohibit restrictions of the system aimed at protecting these areas (Melewski 2002; Randorf 1998; Randorf 2002). By the end of 1993, the NYSDEC suggested to the EPA that it would be willing to withdraw its challenge of the federal acid rain program if an acid deposition standard study (required under the 1990 CAAA to have been presented to Congress by November 1993) were released in the near future and addressed its concerns. In May 1994, an agreement was reached, namely, that the

NYSDEC would not pursue the two issues related to impacts in sensitive areas, and that the EPA would focus on the creation of a deposition standard for sensitive areas such as the Adirondacks in its report to Congress, to be released no later than January 1995.

Under this agreement, the Adirondacks would be treated as a special case for modeling and New York scientists would participate in the research team (Melewski 2002).

However, the report was not ready in even draft form by the January 1995 deadline, prompting the New York legislature to pass a resolution expressing its dissatisfaction, requesting that the EPA create a deposition standard protecting the Adirondacks from acid rain, and asking that the EPA track the trading of sulfur dioxide credits. The report, released in October 1995, contained several findings alarming to those concerned about acid rain in the Adirondacks. First, similar to Ontario, nearly all of the sulfur dioxide emissions causing acid deposition in the Adirondacks came from states beyond New York's neighbors. Second, the reductions required by the 1990 CAAA acid rain problem would not stop the continual acidification of the lakes in the Adirondack region. Third, even with full compliance with the federal program, 43% of these lakes and ponds would be dead within fifty years (Adirondack Council 1996; Kraft 1998; Roy et al. 2000; United States Environmental Protection Agency, Air and Radiation 1995).

Significant political responses to the report happened both federally and in the state government. Federally, a congressman representing much of Adirondack Park and New York's two senators introduced a bill in 1996 aimed at addressing the problem (Adirondack Council 1996; Adirondack Council 1997; Kraft 1998). If passed, it would tighten sulfur dioxide standards, add nitrogen oxides to the trading program, and take into

account the deposition in sensitive areas by adjusting trading from upwind polluters if necessary. In the state government, the response to the study reflected concern that it did not specify numeric deposition standards sufficient to protect the Adirondacks. New York State Attorney General Dennis Vacco filed a suit against the EPA in federal court maintaining that the agency had a non-discretionary requirement to identify acid deposition standards sufficient to protect sensitive areas and to report them to Congress. The lawsuit failed, however, as the court ruled that the identification of specific standards by the EPA was not necessary under the 1990 CAAA (McAvoy 1999).

Also, in 1997, another problematic implication of the design of the 1990 CAAA became clear. Two processes coincided to undermine the effectiveness of the legislation. First, the price of sulfur dioxide credits bottomed out since compliance could be attained by simply purchasing and using inexpensive low-sulfur coal. Second, earlier efforts by New York State utilities to lessen their emissions, as required under the 1984 ACDA, meant that New York's utilities were in possession of an especially large number of excess credits. The result is that the Long Island Lighting Company (LILCO), Long Island's utility, sold excess credits to Midwestern producers of high-sulfur coal which, in turn, gave the credits away to mid-western coal customers for free. Between 1995 and 1997, the allowances sold by LILCO amounted to nearly 80,000 tons of coal (Kraft 1998; Melewski 2002; Stashenko 1998). In response, two state senators and a state assemblyman drafted bills (one for the Senate and one for the Assembly) that would fine a state utility for up to three times the value of a pollution credit if the NYSDEC Commissioner determined that its sale damaged New York's environment (Violette 1997). The bill passed the Assembly in July 1997, but rather than encouraging the Senate

to pass it and indicating that he would sign the passed bill, Governor Pataki proposed an alternative bill the same month which would require any sulfur dioxide allowance holder in New York to offer the allowance to the New York State Energy Research and Development Authority (NYSERDA) before selling it outside the state. In addition, the NYSDEC would have authority to prohibit any allowance sale to a buyer outside of New York.

The final policy outcome was an agreement between New York State and LILCO, announced by the Governor in April 1998, stipulating that LILCO was prohibited from selling sulfur dioxide allowances to polluters in fifteen states whose pollution travelled to New York (Stashenko 1998). Furthermore, these polluters were prohibited from purchasing allowances originally allocated to LILCO, even if the allowances were included in the sale of high-sulfur coal from a coal producer. Summing up the problems associated with the implementation of the 1990 CAAA for New York, Bernard Melewski (2002, 189), former Adirondack Council head, noted:

The LILCO experience showed how the allowance trading program, without a deposition standard, failed to solve the problems in the Adirondacks, as it resulted in utilities generating revenue by selling allowances to upwind sources.

Only by restricting the cap-and-trade system under the 1990 CAAA with an overlaying program limiting trading was the New York State government able to ameliorate the pollution problem that this part of the federal program was designed to address in the first place.

As scientific research continued to underscore the severity of the acid rain problem in the Adirondacks and the insufficiency of the 1990 CAAA, further political action continued on the acid rain issue both federally and in Albany for the next few

years.²⁰ During late 1998 through 1999, Senate subcommittee and committee meetings were held to consider the Acid Deposition Control Act proposed by federal senators and congressmen from New York State (Adirondack Council 1999). With or without this federal legislation, however (and, indeed, it never passed Congress), Governor Pataki announced in late 1999 that New York State would implement the bill within the state by requiring the sulfur dioxide and nitrogen oxide reductions from power plants that would have been required by it (Melewski 2002).

Of particular importance following this latest policy move were the findings of the General Accounting Office underscoring the severity of the nitrogen threat to the Adirondacks and quantifying the extent to which Midwestern power plants rely on sulfur dioxide allowances from the downwind states to enable them to pollute at increased levels. Under the trading program, the Northeast's stricter standards had enabled the upwind polluters to take less stringent measures to lessen pollution than they would otherwise have had to. As a result, a bill was proposed by the New York State legislature to extend the allowance selling restrictions already in place for LILCO to all power plants in the state. If an allowance sold by a utility from New York eventually went to a Midwest power plant, the Public Service Commission (NYSPSC, New York's utility

²⁰ In particular, the 1998 report to Congress by the National Acid Precipitation Assessment Program (NAPAP) indicating that the Adirondacks had not exhibited decreasing acidity; and the findings of the General Accounting Office, released in March 2000, indicating (1) that nitrogen deposition in the Adirondacks had increased and the soil had lost some of its buffering ability, and (2) that nearly twenty percent of the sulfur dioxide allowances used by Midwestern power plants originated from outside of these states, and about twenty percent of that originated from the northeastern and mid-Atlantic states (Adirondack Council 1999; Pouyat 1998; Randorf 2002).

regulator) would issue a fine to the New York power plant it had originally been allocated to (Adirondack Council 2002).

The legislature passed the bill and the Governor Pataki signed the New York State Air Pollution Mitigation Law in May 2000. However, as the NYSPSC began to implement it, an industrial coalition of manufacturers, and mining companies power generators filed a lawsuit seeking to have the law overturned on the grounds that it violated the rights of power companies under the 1990 CAAA (Melewski 2002). In April 2002, a federal district court judge ruled in favor of the industrial coalition, throwing out the law (Cappiello 2002).

Despite this setback, however, the Attorney General's office of New York State continued looking for litigious means for the state to lessen the pollution travelling from the Midwest. In the sections that follow this chapter examines the actions of New York State to use the CAA as an air pollution bill of rights to require other states to adopt stricter standards by compelling the EPA to create and enforce air pollution abatement rules consistent with the statute. Here it shows that the increasing interconnectedness of the American air pollution regime across states has enhanced the influence of the states taking a leadership role in air pollution governance.

3.2. Litigation over New Source Review

As mentioned earlier, the 1970 CAA explicitly did not regulate existing power plants and factories since Congress assumed that they would be phased out within ten to fifteen years. The federal air quality statute that followed the 1970 CAA was the 1977 CAAA, which addressed legal questions that had arisen regarding the regulation of new sources of air pollution. Following the enactment of the 1970 CAA, one of its obscure

provisions, the Prevention of Significant Deterioration (PSD) program, became more important than anticipated. The program's objective is to prevent stationary sources of air pollution from relocating to places with ambient emissions substantially below those allowed under the NAAQS. If they did, they may be subject to SIPs specifying fewer or more lax controls, creating an incentive structure that the PSD program sought to prevent. The program was developed by the courts through *Sierra Club v. Ruckelshaus* (1972) and *Natural Resource Defense Council v. Environmental Protection Agency* (1974), and codified in the 1977 CAAA. According to Klyza and Sousa (2008), this was part of a more general trend in the US during the 1970s and early 1980s, whereby the activist courts would issue far-reaching decisions on interpretation and administrative law, and the federal legislature would codify them in the form of legislation. Although it appears from the program's development that it is not an instance of governance by the localities, it is important to note that the PSD is a subset of the NSR program, which (as discussed below) has been used as one of the main mechanisms for localities to require others to abate their own emissions.

The primary function of the CAAA of 1977 was to tighten and clarify the NSR rules for stationary sources. The rules indicated that new stationary sources of air pollution would need to receive a permit to operate. "This permit would require the new source to employ technologies leading to the lowest achievable emission rate and to offset any increased emissions with reductions from some other source in the area" (Klyza and Sousa 2008, 137). Two NSR programs were addressed in the 1977 CAAA: the PSD NSR program, and the NSR program for non-attainment areas. The former program required new stationary sources in areas meeting national standards to undergo

new source review and obtain a permit specifying the abatement measure that would be taken. The latter required new plants in non-attainment areas to also obtain permits requiring the factory or power plant to “employ technologies leading to the lowest achievable emission rate and to offset any increased emissions with reductions from some other source in the area” (Klyza and Sousa 2008, 137).

The NSR program allowed for routine maintenance on stationary source without requiring a permit and the installation of abatement technology. But as the utilities found it economically beneficial to extend the life of existing plants, this created a legal difficulty for regulators. Were these life extension projects routine maintenance and therefore exempt from NSR, or were they “new source” activities requiring NSR and a permit? Litigation over these questions began in the late 1990s and extended beyond the middle of the next decade.

The NSR lawsuit saga began in early November 1999 when the EPA sued seven electrical utilities for NSR violations at thirty-two coal-fired power plants in ten states in the Midwest and Southeast. In the suits the government accused the companies of modernizing their plants without modernizing their pollution controls, as required by the CAA. EPA administrator Carol Browner said that in retooling old plants without contacting regulators, the companies had committed “very, very significant violations of the Clean Air Act” (Stout 1999, A1). New York and Connecticut also filed a suit against one of the power companies, the Ohio-based American Electrical Power Company, for violations at ten of its power plants, and were joined in the suit by Maryland, Massachusetts, New Hampshire, New Jersey, Rhode Island, and Vermont. At issue in all of these suits is whether or not the modernizations qualify as “routine maintenance”

under the CAA. As Peter H. Lehner, chief of the New York Attorney General's Environmental Protection Bureau put it, "If it's routine maintenance, we lose; if it's not, they lose" (Stout 1999, A24).

A few weeks later, Browner said that New York City and Hartford, Connecticut were among nine non-attainment areas in the United States with inadequate smog cleanup plans, placing their states at risk of losing money for highway projects (Revkin 1999). Both of these states blamed their problems on air pollution traveling from the Midwest.

Several other utilities were notified of pending legal action and, for the most part, the utilities did not cooperate. Rather, they immediately turned to the Republican-controlled Congress for relief from the lawsuits. When they were unexpectedly rejected on this front, some of the utilities struck billion dollar bargains with the federal government. Others instead decided to donate to the 2000 election campaign of George W. Bush since, if he won, it would potentially give the utilities a friendlier executive branch to deal with.

Just over a week after taking office, President Bush created the National Energy Policy Development Group, headed by Dick Cheney. This task force was assigned to create a national energy policy, and in doing so consulted with a range of utility industry insiders who were influential in the shaping (Barcott 2004). Among these insiders was Haley Barbour, former chairman of the Republican National Convention, who was hired by a consortium of energy companies to represent them in a personal meeting with Dick Cheney. The report was published during May 2001 and, around the same time, the process of rewriting the NSR rules commenced. Heavily involved in this process was Jeffrey Holmstead, a former industry lobbyist who later became an assistant administrator

at the EPA, and several members of the Energy Department. In November 2001, the Department of Energy circulated its proposed changes to the NSR program to the EPA staff for feedback. In an internal memo, EPA officials commented that the report “contains only comments by industry and ignores the comments of all other stakeholders” (Barcott 2004). By this point it was clear to the electric utilities that settling the lawsuits made no sense, and that a rule change would benefit those who waited for it. This had the effect of putting an end to any possible settlements that the EPA was negotiating.

The overhaul of NSR was revealed by the EPA in a low-key meeting in November 2002. Its main feature was that it granted ten-year exemptions from pollution-control upgrades to utilities that installed new pollution-control equipment. But the biggest change was not announced until early 2003, when the issue of the definition of “routine maintenance” was addressed. At first, the Bush Administration announced that the new rule would specify a percentage of the total value of the plant that could be used for routine maintenance annually. This would replace the NSR rule that each project had to be assessed on a on-by-one basis with an annual allowance. The rule without the percentage was published in the Federal Register, prompting the attorneys general of several states—mostly ones in the Northeast—to sue to prevent the rules from taking effect.

In August 2003, shortly after EPA administrator Christine Whitman resigned, the EPA announced that the threshold for the new rule would be twenty percent, meaning that a utility could spend twenty percent of the value of a power plant annually on upgrades and it would still be considered “routine maintenance” even if it caused the

plant to emit more pollution than before. The new rule proved unpopular with defenders of NSR. The Adirondack Council's deputy director, Bernard Meleski, said:

it is unfortunate that the EPA didn't follow the advice we gave them in the spring [to wait until it tightens NAAQS for sulfur dioxide, nitrogen oxides, and mercury before revising NSR]. We told them they were putting the cart before the horse, and now it looks like the horse is out of the barn. We applaud the resolve of Attorney General Spitzer to use his authority to try to reign in EPA, but more needs to be done (Adirondack Council 2003).

Eric Shaeffer, a former EPA official commented that "Five percent would have been too high, but twenty? I don't think the industry expected that in its wildest dreams" (Barcott 2004, 39). Similarly, executive director of the Clean Air Trust, Frank O'Donnell said, "It's a moron test for power companies. It's such a big loophole that only a moron would trip over it and become subject to NSR requirements" (Barcott 2004, 39). Two months after the announcement, EPA assistant administrator J.P. Suarez informed the agency's staff that it would evaluate and perhaps choose not to pursue the NSR investigations and, indeed, investigations into seventy of the companies suspected of violating the CAA were abandoned.

Twelve states, led by New York, responded to the twenty percent rule in October by suing the EPA and Bush administration, arguing that it was illegal. These states, plus two more and the District of Columbia, filed a second lawsuit in November 2003 to have the new rule put on hold until the case was brought to trial.²¹ New York Attorney General Elliot Spitzer said, "It is a sad day in America when a coalition of states must go

²¹ The states and other parties involved in the lawsuit were California, Connecticut, Illinois, Maine, Maryland, Massachusetts, New Hampshire, New Mexico, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Wisconsin, and several local governments including New York City and various Connecticut municipalities.

to federal court to defend the Clean Air Act against the misguided actions of the federal agency created to protect the environment” (Neilan 2003). Connecticut Attorney General Richard Blumenthal added, “The Bush administration seeks to repeal the Clean Air Act by dictatorial edict, which it can't legally do. In doing so, the administration is sacrificing public health and the environment to advance the financial interests of its friends in the energy industry” (Neilan 2003).

On December 24, 2003, two days before the rule was to take effect, the Court of Appeals for the District of Columbia Circuit ruled in favor of the states for a stay of the rule. The court found that the EPA lacked the discretionary authority under the CAA to create the rule since the statute is not vague enough to support the EPA's interpretation of it. It also said it would expedite the case filed in October 2003 challenging the legality of the rule (Barcott 2004).

The ruling created uncertainty about the future of the CAA and, in the short term, which set of rules to apply. Four Northeast states (Connecticut, New Jersey, New York, and Pennsylvania) decided to take advantage of the court ruling by suing the power companies the EPA refused to regulate under the old rule, pending the outcome of the court cases. Elliot Spitzer said of the court action, “We at the state level will fulfill the critical policy mission of ensuring that the air we breathe is clean” (Depalma 2004, B4). In June 2005, the Fourth Circuit Court of Appeals, ruling in a different case, applied the new Bush rules and ruled that Duke Energy did not violate the CAA when expanding facilities even though it did not add antipollution devices (Markon 2005).

However, the matter was finally resolved on March 17, 2006, when the same appeals court that issued the stay over two years earlier overturned the Bush

administration's twenty percent allowance rule. In the unanimous ruling by a three-judge panel, the court said that the “plain language” of the CAA required a stricter approach, and that “only in a Humpty-Dumpty world” could the Bush administration's reading of the law be convincing (Janofsky 2006, A1). In response, Spitzer said that “This is an enormous victory over the concerted efforts by the Bush administration to dismantle the Clean Air Act,” and the *New York Times* editorial board wrote that “it is nice to hear someone say that you cannot rewrite an act of Congress just because you do not like it” (Janofsky 2006, A12; Editorial 2006, C11). The utilities expressed very different views. Scott Segal, director of the Electric Reliability Coordinating Council, an industry trade organization, said that “This is a terrible decision,” and referred to the “routine maintenance” doctrine of the CAA as the “any physical change” definition (Janofsky 2006, A12). Similarly, the president of the National Association of Manufacturers, John Engler, called the ruling “a significant setback to businesses efficiency” (Janofsky 2006, A12). The Bush administration appealed the decision and requested a rehearing of the case by the entire Court of Appeals panel, which was denied in July 2006.

The original lawsuit filed by New York and Connecticut against the American Electrical Power Company in 1999 was subsequently settled in October 2007, when the latter agreed to spend \$4.6 billion to reduce emissions from sixteen power plants, in what was the biggest air pollution settlement in US history (Wald and Saul 2007). Also part of the settlement was a substantial reduction in sulfur dioxide and nitrous oxide. Speaking afterward about the need to stop air pollution at its source before it drifts to the Northeast, New Jersey attorney general Anne Milgram said “Over time, New Jersey has taken any number of regulatory steps to reduce its own sources of pollution. However, emissions

from upwind, coal-fired power plants such as those impacted by this agreement have continued to pose a safety and health threat” (Pegg 2007).

This case study illustrates what has become a familiar pattern in recent years, namely, Northeast states using the American air pollution regime, in particular the dimension represented by the CAA, to compel upwind states and the businesses they represent to lessen their emissions. Here the matter was complicated because the polluting industries found an ally in the White House who would represent their views about how air pollution should be governed. The states had to win not only the lawsuits based on the long-standing rule for routine maintenance, but they also had to fight for the rule when it was threatened. The next subsection exhibits the same dynamic of downwind states engaging in litigation to reduce emissions from upwind sources, but with mobile sources.

3.3. Massachusetts v. EPA: Greenhouse Gases and Tailpipe Emissions

One of the recent court cases which most clearly shows that the CAA serves as a statutory basis for lawsuits between regions is *Massachusetts v. Environmental Protection Agency* (2007). At issue was whether or not the EPA would regulate greenhouse gases (namely, hydrofluorocarbon, nitrous oxide, carbon dioxide, and methane) emitted by automobiles. In 1998 and 1999, EPA general councils concluded that greenhouse gases meet the CAA definition of air pollutants and, in 1999, the EPA Administrator testified to Congress that the EPA had the authority to regulate greenhouse gases under the statute. Several NGOs then petitioned the EPA to regulate the four greenhouse gases, but by the time the ninety-day public comment period for the petition was initiated in January 2001, the Clinton administration was about to leave office (Klyza and Sousa 2008).

In September 2003, the EPA, under the Bush administration, rejected the petition and announced that it would not set automobile “tailpipe” emissions standards on greenhouse gases since it lacked the authority under the CAA to do so, and would not exercise the authority even if it did. In response, several NGOs and US states and cities (including New York State and New York City) sued the EPA. The Court of Appeals of the District of Columbia issued a split decision in July 2005 favoring the EPA. However in June 2006, the US Supreme Court agreed to hear the case. Nine months later, during April 2007, the court decided in a 5-4 split decision in favor of the petitioners. It ruled that the EPA had the authority to regulate greenhouse gases in automobile emissions, and that the EPA cannot sidestep its authority to regulate the greenhouse gases that contribute to climate change unless it could provide a scientific basis for doing so (Greenhouse 2007). In his majority decision, Justice Stevens said that the EPA had defied a “clear statutory command” from the CAA with its refusal to regulate the emissions (Greenhouse 2007, A1).

The main legal question for the justices surrounded the issue of standing to sue. Since the *Scrap* case of 1973, an environmental case which the US Supreme Court allowed to proceed on a very generous definition of standing, the Court had steadily raised the barrier. Chief Justice Roberts and the other dissenters argued that allowing states, cities, and environmental groups to sue was inappropriate since it transgressed the properly limited roll of the courts, enabling it to address grievances which should instead be dealt with by Congress and the Executive. Roberts disparagingly referred to the decision as “*Scrap for a new generation*” (quoted in Greenhouse 2010). Once the standing to sue was established, the justices had no problem establishing that greenhouse

gasses qualified as air pollution under the CAA's broad definition of what the term includes.

This case and the US Supreme Court decision have several important implications for air pollution governance in the United States. First, the case shows that, despite the tightening rules of standing to sue, states and cities are able to use the CAA as a basis for lawsuits. Second, aside from the specific focus on the case of tailpipe emissions, the decision likely has implications for others cases and regulatory questions related to greenhouse gases. Indeed, the court case had held up many others around the country which awaited the decision. Among them was a challenge to the EPA's refusal to regulate carbon dioxide emissions from power plants, which had been pending in federal court (Greenhouse 2007).

Most importantly, *Massachusetts v. EPA* shows that localities suffering from air pollution have a statutory basis from the CAA for legal recourse, and that they are willing to use it. Not only did the participants in the lawsuit fall along the lines of the states that suffer from air pollution on the one hand, and the states with dominant industries that produce it, on the other hand, but the rhetoric of local damage was used in court. Among the injuries claimed by the states were those due to loss of land from climate change related to sea level rise. Of course, the case was not only about climate change—hydrofluorocarbons are a main ingredient in smog and nitrous oxide is in both smog and acid rain.

Subsequent lawsuits were filed in March 2010 by states still seeking to avoid the regulations (Gardner 2010). Nevertheless, by March 2010, the EPA was purportedly weeks away from issuing greenhouse gas regulations on automobiles, while it claimed

that similar regulations on stationary sources would come in January 2011 (Anon. 2010). At around this same time, on April 1, 2010, both the United States and Canada announced that they would require automobile fleets to meet the fuel efficiency standards currently used in California and in the Northeast states (Keenan, Chase, and Vanderklippe 2010). Thus, the efforts of California and several Northeast states to compel other states to strengthen their regulations appears to have been successful. This means that the CAA, while perhaps not hard tool for use by the executive branch of the federal government to force polluting businesses to emit less, still has a valuable function. More than a mechanism for providing businesses with regulatory consistency across the United States, it creates an element of contingency in the air pollution regime by allowing litigation to be a necessary route for governance to occur. A statute, once passed, is subject to a range of judicial interpretation. And since legal decisions can go either way, it is not clear whether this contingency entails that regulations will be tightened.

3.4. The Adirondack Council

Numerous individuals, agencies, and organizations have played an important part in addressing the problem of air pollution in New York State. No trustworthy account can deny the importance of prioritizing acid rain and smog by New York's elected officials (especially its governors and attorneys general), the actions of the NY Environmental Protection Bureau, the NYDEC, the Saranac Lakes Area Chamber of Commerce, and public opinion in support of these actions. And while disentangling the relative importance of each of these at different points in time is outside the scope of this

project, the influence of northern New York State's property-based pressure group, the Adirondack Council (AC), merits special consideration.

Founded in 1975, the AC advocates reduced air pollution, improved water quality, and the sustainable use of private and public land. Throughout the 1980s, its primary focus was acid rain but, from the 1990s to the present, it added mercury reduction and climate change abatement to its platform, as well as city planning and economic growth in response to the economic decline of the region (Randorf 1998). As of early 2012, among the elements of its advocacy platform are several positions related to infrastructural development, including securing growth funds for local planning; revitalizing main streets; upgrading water and wastewater treatment systems; improving public transportation; as well as a range of policies to help the Adirondacks' farms expand the market for their products (Adirondack Council 2012).

On the surface, the AC may appear as an environmental NGO representing the values of middle-class citizens. While it began as a coalition of like-minded organizations similar to the Canadian Coalition on Acid Rain, it has evolved into an independent organization. Yet there are several reasons to believe that the AC is an elite property-based organization aimed at preserving land value in the Adirondack Park rather than simply an environmental organization interested in environmental preservation for its own sake. First, a simple Google search of the AC's board of directors shows that it is composed of wealthy elites and local boosters. In 2011, it included the CEO of the Lake Placid Regional Office of Sustainable Tourism, several influential NYC attorneys, CEOs of large global private equity firms, a president of a large investment and real estate

company with offices in NYC's Rockefeller Plaza, a Broadway playwright and production company head, and several others in positions of influence.

Second, as half of the Adirondack Park is privately owned and heavily reliant on tourism, the AC has favored positions that would resuscitate the features of the region's ecology amenable to tourism. Rather than concern itself with a wide range of environmental problems occurring throughout the state of New York (such as those causing damage to human health), the AC has concerned itself with the Adirondack Park's dying lakes and forests. Similar to the Muskoka District of Ontario, the aquatic ecosystems of these lakes provide an attraction to sportsmen and other vacationers and make the area more enjoyable to live in. Without this, and with the damage sustained by its forests, the Adirondack Park loses much of its main draw.

Third, the AC supports economic growth consistent with the long-term maintenance of the natural beauty of the region. According to the AC's Director of Communications, the organization wants growth "limited to appropriate (usually already developed) locations including existing villages and town centers" (February 2012 email communication from John Sheehan; unreferenced). In practice, the AC has favored regional development projects lobbied against by environmental groups. In one high-profile instance, during early 2012, the Adirondack Council supported the creation of the Adirondack Club and Resort (ACR), a development with over 650 units of housing, a hotel, ski center, shops, a marina, and an equestrian center (Foderaro 2012). Given that the Tupper Lake area has been struggling economically for many years, local residents were in favor of this development and hopeful it would enhance tourism. The ACR had to be approved by the Adirondack Park Agency, a state agency with the responsibility to

manage the park. In January 2012, after much negotiation between the AC and the Adirondack Park Agency on the specifics of the design of the development, the ACR was approved on a 10-1 vote. Environmental groups against the proposed resort include Protect the Adirondacks and Adirondack Wild. Referring to the economic interests supporting the ACR, a lawyer and board member of Protect the Adirondacks said that “With this vote, it is now clear that the park’s anti-environment and pro-development forces have achieved their long-term goal of capturing control of the park agency” (Foderaro 2012, A18). In contrast, the Adirondack Council’s executive director said the following in response to the ACR’s passage: “We all know the Adirondacks need economic development. Our belief is that the future is in revitalizing the town centers and hamlets. We must protect the wild character and ecological integrity of the backcountry because that’s the core value of the Adirondacks” (Foderaro 2012, A18). Thus, although the AC portrays itself as an environmental group, it is helpful to also understand it as a property-based elite lobbying organization.²²

²² There are many other examples of the AC supporting policies favoring tourism. Three more are worthy of mention here. First, on the matter of disputes over the right of recreationists to travel through private property on waterways, the AC “has worked with recreationists and landowners in support of legislation to protect landowners from liability for injuries incurred by recreationists” (Adirondack Council 1999, 3). In this instance, the AC acted as a mediator between two groups with an overlapping interest in promoting tourism. Second, the AC supported the renovation of a nineteenth-century covered bridge, a historic landmark in the Town of Jay. This renovation was needed to enable heavy trucks to travel through the region and to prevent the building of a less aesthetically pleasing modern alternative (Adirondack Council 1996; Duggan 2004). Third, the AC has opposed the building of large retail stores within the Adirondack Park. Commenting on a controversy in the late 1990s over whether a Wal-Mart superstore would be allowed to be built in Lake Placid, the AC stated its general position that it “has opposed plans to locate giant retail stores within the boundaries of the Adirondack Park because of the adverse effects they would have on both the environment and small town economies of the Adirondacks” (Adirondack Council 1996, 4).

The AC began to have a substantial influence on Air Pollution governance during the early 1980s. In 1980, working with a coalition tourism operators, timber producers, shoreowner's associations, sportsmen, and other local interests, the AC raised money used for lobbying the public and state legislators. It also began communicating with the newly-formed Canadian Coalition on Acid Rain and, in 1982, representatives from the two organizations had an exchange of visits to the Adirondacks and Muskokas to observe the damage in each other's region (Randorf 1998). Its earliest political success was its decisively important lobbying for the 1984 Acid Deposition Control Act as a member of a New York-based coalition called the Environmental Planning Lobby (EPL). According to Bernard Melewski, the executive director during this period:

EPL was a true coalition of groups at the time, a non-tax-deductible lobby organization that represented many groups in NY who by virtue of federal laws, that have how been changed, pooled their resources to fund a lobbyist. That included NRDC and the Adirondack Council, Sierra Club, [and] Wilderness Society (Feb. 2012 email communication; unreferenced).

Referring to the influence of this organization on the 1984 Acid Deposition Control Act, and the disagreement between the NYSDEC and EDF about whether the legislation would include a tradable allowance system, Melewski states that “[NYS]DEC and EDF were unable to resolve their differences, and we offered the grand compromise” (Feb. 2012 email communication; unreferenced). That is, the EPL, an environment-themed coalition including the AC as a member group, developed the compromise solution of region-sensitive allowance allocations.²³

²³ In this instance, the coalition was not specifically a growth coalition, although it was regional in focus and included the participation of the AC, a property-based group. This

Beyond that, the AC framed scientific information for policymakers and the public alike, raising awareness about the detrimental effects of acid rain on the Adirondack Park's economy and ecology. From 1984 to 1987, an arm's-length non-profit organization receiving funding from government sources including the NYSDEC and the EPA, called the Adirondack Lakes Survey Corporation, conducted comprehensive surveys on nearly 1500 waters in the Adirondack Park. The objective of this study and resulting report, *Adirondack Lakes Study 1984-1987: An Evaluation of Fish Communities and Water Chemistry*, was ostensibly "to provide an accurate up-to-date database that would establish a basis for assessing future environmental impacts and associated trends and provide scientific data for making fisheries management decisions" (Adirondack Lakes Survey Corporation 2012). With this scientific information, the AC engaged in a campaign to employ it in support of its political objectives. A special report in 1987, *Beside the Stilled Waters*, was particularly effective in influencing New York State's federal representatives to address the issue with national acid rain legislation (Randorf 1987). Citing Ontario's *Countdown Acid Rain* report quoting Environment Canada publications, the report consists of a collection of photos and narratives vividly depicting the ecological and economic damage done to the area. Gary Randorf (1998, 176), its author and executive director of the AC at the time, says the report "was widely circulated in congressional and Administration offices in Washington, apparently motivating additional lawmakers to line up on the side of those who were already strongly behind adding an acid rain provision to the Clean Air Act."

underscores the overlap, in the Adirondack region, between ecological issues and long-term development issues, for which the region is dependent on a healthy ecosystem.

The AC continued to produce regular newsletters and other special reports throughout the 1990s, all aimed at influencing policy by framing relevant scientific evidence and underscoring the health and economic costs of acid rain (Adirondack Council 1996; Adirondack Council 1999). After the details of the draft deposition study became available in 1995, and a Republican congressman (Gerald Solomon, representing the Adirondack region) wrote a letter to the EPA requesting the final study be completed, the AC staff worked to gather co-signers for the letter. Later, when the same congressman proposed a bill before the US Congress in late 1995 that would limit pollution from sources in the Midwest through the required installation of pollution control devices, the AC worked with a range of other organizations to build a coalition in support of the legislation. Coinciding with this lobbying was the launch of the AC's "Pure Waters Campaign," a year-long publicity effort conducted throughout 1996 consisting of extensive television and radio advertising throughout the state featuring the popular entertainer Bonnie Raitt. The television advertisements contained imagery depicting the ecological damage from acid rain and information about how to contact government leaders (Adirondack Council 1996).

Apart from these public and government lobbying efforts, the AC's research also played an important role in the events leading up to the 1998 agreement between NYS and LILCO restricting the sale of sulfur dioxide permits to power plants in upwind states. Taking advantage of the fact that the EPA Acid Rain Division had computerized its trading operations and made data on trades freely available over the Internet, the AC traced the sales of LILCO's allowances from 1995 to 1997, showing that LILCO had sold nearly 80,000 tons of allowances to power plants causing pollution in the Adirondacks. It

was this information, released during June 1997, that convinced the state senators to introduce the legislation that eventually resulted in the agreement limiting the sale of LILCO's allowances (Randorf 1998). A month later, the NYS Assembly passed its version of the bill. Within days, the AC released additional information, coinciding with Governor Pataki's version of the bill, more clearly illustrating the flows of excess allowances. The AC showed that LILCO had sold over 115,000 allowances to commodities brokers who in turn resold nearly all of them. Of these, more than two thirds ended up at power plants whose pollution caused the acidification of the Adirondacks. Shortly thereafter, both US Senators from NYS announced the joint sponsorship of federal acid rain legislation (which never made it out of Congress) and, more importantly, within a year the agreement with LILCO was reached. In this agreement, the AC participated in drafting the language prohibiting the sale of LILCO's sulfur dioxide allowances to upwind polluters. Later, the AC successfully lobbied for what became the New York State Air Pollution Mitigation Law in May 2000, although, as mentioned above, it was later thrown out in court (February 2012 email communication from John Sheehan; unreferenced).

3.4.1. Federal reports and litigation

In addition to these other activities, the Adirondack Council has, on occasion, taken part in litigious efforts to address air pollution. This began in the 1980s when the AC urged NYSAG Robert Abrams to sue the EPA over failing to enforce the CAA sufficiently to protect the state from acid rain. The lawsuits, filed in 1985 and 1987 with the participation of several other northeastern states, were not successful (Anon. 1984a; Editorial 1986b; Langer 1985; Shabecoff 1987). However, according to a senior staff

member at the AC, “they set a tone by which every attorney general since then has done something to press the feds for better regulation and enforcement of the Clean Air Act” (February 2012 email communication from John Sheehan; unreferenced).

Afterwards, the AC’s participation in NYS air pollution litigation became more successful. When the EPA was sued in 1993 over its refusal to develop a deposition standard or take other measures to protect sensitive regions, it was the AC that petitioned jointly with the NYSDEC (Kraft 1998; Randorf 2002). Furthermore, the AC was involved in the 1994 negotiations resulting in the agreement between the NYSDEC and the EPA to release the 1995 deposition report (Sheehan 1998). As mentioned above, this report acted as a catalyst for additional policy action, including a proposed federal bill and an additional lawsuit by the NYSAG. Although this specific federal bill did not pass, the AC testified to the Senate Subcommittee reviewing the legislation, and the proposed pollution reductions were later made as a result of the NSR litigation (Adirondack Council 1999).

The AC also played an important role in the NSR litigation. By the late 1990s, the AC adopted a strategy of trying to embarrass the Clinton administration over the issue of acid rain. Among these tactics, the AC attempted to facilitate the release of the findings of the National Acid Precipitation Report (NAPAP), the result of a 10-year \$500 million federal research project initiated by New York Senator Daniel Patrick Moynihan. The AC’s communications director had the following to say about this process:

In 1996 or 97, when the National Acid Precipitation Assessment Report was due to be delivered to Congress and to the research team that helped compile the information, the Clinton Administration refused to release it, claiming it lacked the funding for the printing job. What it lacked was the gumption to tell the public that acid rain was still a

problem in the most sensitive areas of the US, as NAPAP had discovered but had not yet reported. So, when the NAPAP team went to Washington, DC for its once-every-five-years conference to discuss a report that hadn't been printed, we pirated a copy from an inside source and printed hundreds of copies. We brought them to DC and gave them to Congress, the media and the scientists whose names were on it (Feb. 2012 email communication from John Sheehan; unreferenced).

This study, as well as data from the AC, was used in the 1999 NSR litigation initiated by the Clinton Administration. Furthermore, the AC worked with Attorney General Spitzer's staff on strategies to address air pollution transport. When Spitzer announced the NYS-led litigation to accompany the EPA's litigation, he used a slide show prepared by the AC with images from their publications (Feb. 2012 email communication from John Sheehan; unreferenced). On the role of the AC in providing scientific information and the effects of the NSR lawsuits in American air pollution governance, a staff member of the AC said the following:

By the time of the NSR cases, we had scientific proof of which plants were polluting which places and how much. The numbers were staggering, in that more than 500 coal-fired power plants were polluting the Adirondack Park. Most of those appeared to be violating NSR. It was clear to us that litigation alone would never solve the problem, given the sheer numbers of plants that would have to be sued. Still, the threat of litigation stampeded the power industry to the bargaining table, creating momentum for the Clean Air Interstate Rule (now Cross-State Pollution Rule) and for the Regional Greenhouse Gas Initiative (a 10-state carbon cap-and-trade program) (Feb. 2012 email communication from John Sheehan; unreferenced).

Thus, when the utilities and other owners of coal-fired power plants realized that NSR violations would finally be prosecuted, and that it was cheaper to obey a rule offering a

degree of latitude rather than pay court-determined fines and have less negotiating latitude, it became possible for the federal government to create a new rule.

This is not to say, of course, that the AC was the only factor in determining whether to engage in litigation. The changing nature of air pollution governance—the fact that it now consists of statutory interpretation rather than statutory creation—means that air pollution governance has become more technocratic. According to a former executive within the NYS Attorney General’s Office’s Environmental Protection Bureau (EPB) who led the litigation of the 2000s, the long-term agenda-setting function of the AC was more important than its direct lobbying with regard to the specific litigation. As he put it, air pollution has been a longstanding concern in New York and a political winner in terms of popular support. Within the EPB, the NSR lawsuits and *Massachusetts v. EPA* were seen as opportunities by attorneys who had been continuously looking for ways to lessen the transport of pollution from the Midwest.

3.4.2. Common Ground Alliance

During the mid-2006s, the AC joined other property-based interests to form a local growth coalition called the Common Ground Alliance. This “alliance of over 25 local leaders from organizations that are directly involved in the economic, environmental and social future of New York State’s Adirondack Park” released a report with policy recommendations for the NYS governor (Adirondack Council 2006).²⁴ Titled

²⁴ The Common Ground Alliance continues to exist and release an annual *Blue Print for the Blue Line* report. Among the members of the Common Ground Alliance are the Adirondack Economic Development Corporation, the Adirondack Daily Enterprise local newspaper, the Adirondack North Country Association, the Central Adirondack Association, Homes and Associates, the Plattsburgh-North Country Chamber of Commerce, the Saranac Lakes Area Chamber of Commerce, the Saranac Lakes Red Carpet Team, the Sound Adirondack Growth Alliance, the Tupper Lakes Chamber of

A Blueprint for the Blue Line, it asked governor Spitzer to support proposed federal clean air legislation; increased state funds for acid rain and mercury monitoring; expanded scientific research on acid rain to build a foundation for policy change; and a range of recommendations related to climate change abatement and adaptation (Common Ground Alliance 2008).²⁵ In a letter sent to Governor Spitzer with the report attached, the Alliance underscored the importance of addressing the environmental threats facing the Adirondack Park:

Collectively we have recognized that the region has numerous environmental threats including loss of natural communities and species due to factors such as climate change, unplanned development, and invasive species. In addition, the degradation of water and air quality due to acid rain and mercury pollution and the lack of adequate infrastructure threaten human and ecological health. Increasingly local communities have recognized the adverse impacts of these environmental threats to the tourism and recreation economy and their quality of life (Common Ground Alliance 2006).

Although the Alliance's lobbying is only one factor in the Spitzer Administration's identification of climate change policy as a priority, it deserves to be pointed out that Spitzer created the Sea Level Rise Task Force on climate change adaptation in 2007 (with a final report delivered in 2010) and that, after Spitzer resigned amid controversy in 2008, his temporary replacement David Patterson (2009) signed an executive order specifying GHG reduction goals creating the NY Climate Action Plan.

Commerce, and eight towns. As a coalition, it represents the overlap existing among property owners and ecologists in the Adirondack Park between the goals of property and environmentalists.

²⁵ The *Blue Line* is a term commonly used for the boundaries of the Adirondack Park and Catskill Park.

4. Postscript: When Federal Clean Air Legislation Threatens State Efforts

Although the CAA has served the function of enabling states to bring about stricter air pollution governance in other states, there are reasons for supporters of air pollution abatement to temper their enthusiasm for this route. At times the opposite has happened, whereby the national air pollution regime actually prevented a state from engaging in activities related to smog reduction. In September 2003, the California Air Resources Board issued a rule further limiting the nitrous oxide and hydrocarbon emissions of small engines to the point where they would be required to be built with a catalytic converter (Jenkins 2003; Salorio 2003). By the mid-2000s, small engines under fifty horsepower (most of which were installed in lawnmowers) accounted for seven percent of all smog emissions in California, the equivalent of about three million cars (Associated Press 2006). The EPA estimated that the air emissions standards being considered would have lessened smog-causing emissions by roughly forty percent.

In response to the rule, Briggs & Stratton, the largest small engine manufacturer in the United States, declared that in order to remain competitive it would have to move 2,000 jobs overseas if the rule were carried out (Klyza and Sousa 2008). The factories potentially shedding the jobs are located in Missouri, whose senior US Senator was Republican Kit Bond, chair of the subcommittee which funds the EPA. Bond, calling the rule a move “to force-feed the nation dangerous new regulations without concern for job loss and safety,” and purportedly attempting to prevent the closure of the Missouri plants, tacked a rider onto a spending bill blocking the California rule (quoted in Jenkins 2003; Editorial 2003a; Pear and Janofsky 2003). Despite a letter of support for California from the Environmental Council of the States and attempts by California Senators Diane

Feinstein and Barbara Boxer to block it, the amendment to the bill passed the Appropriations Committee (Klyza and Sousa 2008).

From there the battle over the rule spread to the Senate floor and the House of Representatives. Feinstein expressed concern that the appropriations amendment constituted an amendment to the CAA provision for California to create its own air pollution laws. She said from the Senate floor while blocking Senate business for more than three hours, “I oppose using the appropriations process to take away states' rights under the Clean Air Act. This kind of change to a major law deserves a full debate, hearing and review in the Environment and Public Works Committee” (quoted in Salorio 2003). When she appeared on the verge of killing the amendment, Bond countered that the catalytic converters would increase fire hazards. After failing to remove the provision, Feinstein enlisted the help of California Governor Arnold Schwarzenegger and New York Governor George Pataki, who lobbied against the amendment in the House version of the spending bill. In the end, the amendment did not survive the House bill. Republican Congressman James Walsh from New York, the chair of the Appropriations Subcommittee overseeing the bill, was instrumental in stripping the amendment after talking with officials in Schwarzenegger's office (Lochhead 2003; Klyza and Sousa 2008).

Afterwards, the battle went to conference committee, with Briggs & Stratton now claiming that the rule actually threatened 22,000 jobs in twenty-three states (Pear and Janofsky 2003; Klyza and Sousa 2008). The compromise reached between Bond and Feinstein was that California could issue the rule, but no other states could copy it and, instead, were constrained by the regulations issued by the EPA (Editorial 2003b).

Furthermore, the EPA had to hold off on issuing California a waiver to pursue its own policies until it had satisfied itself that the new rule would not entail safety risks (Barringer 2006).

Rather than the matter being resolved according to the internal processes of the EPA, it dragged on as Bond sought to prevent California from gaining permission. By this time, the chain of events was beginning to resemble the familiar pattern which occurred when California authorities tried to get the automakers to clean up their products with the use of catalytic converters. As Robert Cross, chief of the California air agency's Mobile Source Control Division put it, "I think it's very analogous to what happened in the 70's. The arguments are all the same" (Barringer 2006). As before, numerous studies were conducted. Senator Bond convinced Congress to adopt a measure requiring the National Research Council to study the wisdom of California's regulatory independence under the CAA and, in his 2005 amendments to appropriations legislation, the EPA was charged with the task of studying whether lawnmowers with catalytic converters would be excessively fire prone. Both studies concluded in early 2006 exonerated California, but Briggs & Stratton responded with more studies: one of their own for the Consumer Product Safety Commission, and another by a fire safety NGO that they were helping to fund. In December 2006, however, the CARB was finally granted permission from the EPA to regulate small engine emissions (Associated Press 2006).

The CAA, therefore, is more than a tool for municipal and state politicians to compel other states to reduce their emissions; it also provides an avenue for polluting business interests and the states they operate in to prevent other states from creating their

own regulations. But in either case, the CAA has operated as a means of tightly linking the various localities of the American air pollution regime together. It has changed the configuration of power so that, even though the political will to address air pollution comes from the locality, the actions of local businesses and the politicians who represent them can have wide reach.

5. Conclusion

This chapter traced the development of the US air pollution regime over a roughly sixty-year period beginning in California in the 1950s, covering the era of federal legislation, and the subsequent period of extensive litigation over the federal statutes. It attempts to outline which factors have changed and which have remained persistent facts of air pollution governance in the United States. It argues that the regime has become more linked, so that individual urban governing efforts were eventually ceded to states, whose programs are now largely influenced by the success of other states in externalizing their policy preferences.

This has happened as a result of three related factors, the relative importance of which is difficult to disentangle: (1) the passage of federal legislation aimed at regularizing the regulations between jurisdictions; (2) science about the nature of air pollution transport, unknown at the time the 1970 CAA was written with regional attainment areas; and (3) litigation led by the Northeast states economically affected by the long-range transport of air pollution. The first two factors have reinforced one another through the third, as the CAA has enabled these states to use evolving scientific knowledge of the causes and consequences of specific airborne pollutants as a basis for their legal petitions.

Since the passage of the 1990 CAAA, the American air pollution regime has continued to evolve through the courts as activist states have increasingly resorted to litigation to enforce and develop existing law. The litigation over new source review and greenhouse gas automobile emissions during the late 1990s and 2000s were particularly important examples of this. The decisions in support of new source review opened the door for the 2011 CSAPR on emissions of sulfur dioxide and nitrogen oxides crossing state lines. Furthermore, the US Supreme Court decision on *Massachusetts v. EPA* requires the EPA to regulate greenhouse gases as air pollutants and, failing the passage of a national cap-and-trade system, NSR is the only legally mandated regulatory tool with which to achieve these reductions. Given that litigation has been the primary mechanism for air pollution governance in the United States for the decades of the 1990s and 2000s and beyond, this suggests a new layer of increased complexity. Namely, that recommended courses of action need fit within a legal and political window simultaneously—a litigious effort must be sellable by the elected attorney general, and be made possible by a litigable rule violation.

Despite these changes, the importance of property-based, spatially-bound economic elites in the creation of clean air pollution has persisted. In California during the 1950s and 1960s, the *Los Angeles Times*, Los Angeles Chamber of Commerce, and the Air Pollution Foundation, lobbied government, engaged the public, formulated policy, and negotiated with industry for air pollution abatement. Since the 1980s in New York, the Adirondack Council, an elite-led economic development-promoting organization positioning itself as an environmental group as been of particular importance. This organization has worked with the New York State government for air pollution abatement

by developing policy within the state and aiding the efforts to find relief from outside polluters. Its efforts to encourage the New York State Attorney General's Office to engage in litigation over a twenty-year period helped bring about the return of NSR as a regulatory instrument, a federal air pollution rule requiring reductions of acid rain and smog precursors, and a federal program to regulate greenhouse gas emissions. While this chapter did not identify a property-based interest in the overview of the development of the federal clean air statutes, the logic of this process can be seen within the pattern: namely, federal representatives from California and the Northeast states—the states with existing stringent regulations or on the receiving end of pollution from other regions—pushed for stronger federal programs, while the representatives from states with economies heavily reliant on automobile manufacturing and resource extraction sought to weaken regulations.

Chapter 4: Smog and Acid Rain Governance in Canada

This chapter contains two case studies of air pollution governance in Canada: Toronto's experience with urban smog abatement during the 1950s, and the development of Ontario's contribution to the Eastern Canada Acid Rain Program (ECARP) during the late 1970s to the middle of the 1980s. It thus differs slightly from the previous chapter, which consisted of more than two case studies and attempted to provide a broader overview of the development of a domestic air pollution regime. There are three reasons for this. First, it does not appear that changes have occurred in Canadian air pollution governance analogous to those discussed last chapter in the American regime; namely, the shift from urban governance to federal statute-making and, recently, to the use of litigation on the basis of the federal statute for states/provinces and elected representatives in one state/province to change the regulations in another. Certainly changes have occurred in Canadian air pollution governance over time, but the absence of a federal statute has limited them. Second, the expansive secondary literature available on American air pollution politics and governance does not exist for Canada. There are, of course, notable exceptions (mentioned below) but arguably not enough to give a researcher a sense of the broad trajectory of change across several provinces over the past fifty years. The absence of a published case study on Toronto's urban smog politics of the 1950s is but one example of the relative paucity of existing empirical accounts of Canadian air pollution governance. Thus, as studying air pollution in Canada required more archival research than in the United States, it was necessary to confine this chapter to two manageable case studies. Third, these case studies provide symmetry and comparability with those of the last chapter. A case study on the early urban smog

politics in the Canada's largest and then-fastest growing city, Toronto, provides symmetry with last chapter's discussion of Los Angeles; examining the political response to acid rain in the Muskoka region matches well with the earlier discussion on acid rain in the Adirondack Park. Furthermore, the fact that both of the case studies examined below take place in Ontario has the advantage of enabling the study of change and continuity in the air pollution governance of Canada's wealthiest and most populous province.

In each of the case studies, this chapter provides a brief overview of the literature already written on the topic, a time line of political events, followed by a discussion of the influence of two types of property-based interests: a local growth coalition concerned with the property values of the locality or region deleteriously affected by air pollution, and the region's two metropolitan newspapers. A conclusion then summarizes the terrain covered and discusses the implications of the findings for theories of air pollution governance seeking to explain clean air policy in terms of scientific knowledge.

1. Smog in Toronto, 1950s

On October 16, 1957, Toronto experienced its worst smog event yet recorded, with the sulfur dioxide reading in the Etobicoke region double what had been previously taken in any area of the city. At 1.2 parts per million for three hours in the evening, it was only slightly below the record count of 1.4 taken during the 1952 London smog incident (A. Baker 1957b). Toronto—or “Smogville,” as the downtown waterfront was popularly referred to—was already acknowledged to be among the most air pollution-stricken cities on the continent, its air exacting health and economic costs on its inhabitants and businesses. Yet local leaders were constrained in their ability to address the problem. Dedicating a larger part of the budget to its air pollution control department

and hiring more smoke inspectors helped, but they did not solve one of the roots of the problem, namely, the city's lack of jurisdiction over the heaviest polluters. It was on this issue—who would be in charge of clean air policy in Toronto and what would they be allowed to do—that much of Toronto's and Ontario's air pollution politics centered during the latter half of the 1950s. Local businesses and several members of the Ontario legislature wanted an expanded authority in the hands of the province, while manufacturing interests did not. In the end, a provincial statute was passed reaffirming the city's role as the primary regulator of polluters, yet granting it expanded jurisdiction to do so into areas that had formerly been within the exclusive domain of the federal government. How is it that air pollution governance in Ontario exhibited this bottom-up character, especially given the acknowledgement by Toronto's politicians and businesses that Toronto-only pollution controls may chase industry to other cities within the province?

Substantial literature exists on both (a) the early political efforts of North American cities to address the emerging threat of air pollution and (b) air pollution governance in Canada. Studies of the first category generally provide thorough accounts of the evolving efforts of American city leaders to learn about and resolve an issue that exists as a side effect to the growth occurring in these urban areas (Dewey 2000; Gugliotta 2004; Jacobs and Kelly 2008). The literature discussing air pollution and Canada tends to focus on four topics: (a) the Trail Smelter Dispute of the 1930s between a Canadian Smelter and American farmers (Bratspies and Miller 2006; Dinwoodie 1971; Wirth 1999); (b) early twentieth-century nuisance law cases in Ontario (Deweese and Halewood 1992; Dewees 1992; Nedelsky 1981); (c) the Eastern Canada Acid Rain

Program of the 1980s (Macdonald 1997; Macdonald 2007; Munton 2004); and (d) the Canada-United States AQA with its protocols, beginning in 1991 and extending to the present (McLean and Barton 2008; Munton 1997; Munton et al. 1999; VanNijnatten 2003; VanNijnatten 2009). The theoretical foci of these sources vary but, in general, those in the first two categories are written by legal theorists concerned with the historical development of Canadian environmental jurisprudence, while those of the last two are authored by political scientists trying to unravel the complexities of multilevel environmental governance for a federal state (Canada) which creates environmental agreements with another federal state (the United States).

Despite this wealth of knowledge, we are still missing an account of the air pollution politics of Toronto during the 1950s, when policymakers first took concrete measures to address the problem. This is important for the study of urban-based early political efforts because it is not clear whether the dynamics which occurred in the United States cities also occurred elsewhere, in places with different industries, governmental institutions, and legal systems. Furthermore, for Canadian air pollution politics, a study of the political dynamics present in the Toronto urban smog abatement effort can help clarify the source of the political incentive to address air pollution in the country, and the extent to which this has persisted over time.

This case study argues that Toronto's property-based interests were pivotal in bringing about air pollution relief in the 1950s. Public opinion, the manufacturing industry, and individual civil servants were important to varying degrees as well, but it was the interests standing to gain from economic growth (and recognizing air pollution as a threat to that growth) who led the effort to clean up the city's air. They did so by

conducting research on the economic costs of air pollution, holding educational symposiums attended by influential Torontonians, releasing reports with policy recommendations, and lobbying provincial politicians in person. And by the end of the 1950s it was apparent that they had been reasonably successful—budgets and jurisdiction had been expanded and air pollution was on the decline. This is not to say that the property-based interests got everything they sought, however. The Canadian manufacturing lobby served as an effective countervailing interest, not able to put a halt to air pollution abatement efforts entirely, yet powerful enough to ensure that policy was formulated at least partly on their terms.

In what follows, this case study begins with a brief background discussion of Toronto's stage of development in the 1950s. Then two time lines are presented: one of the Ontario government's response to the air pollution problem, and the other of the municipal government's actions. Although these happened concurrently, they are distinguishable by the divergent functions of the different governments—the provincial government's task was to decide which government entity would have what capacities, while the municipal government simply tried to use whatever capacities it had to create and enforce bylaws. Following this, the case study discusses the role that a few of the city's property-based actors played in pushing for and formulating clean air policy. Specifically, it presents the actions of Toronto's most influential local growth coalition and the city's two largest-circulation daily newspapers.

1.1. Toronto's Stage of Development in the 1950s

The 1950s was a period of rapid population growth for the Toronto metropolitan area. From 1951 to 1961, the population expanded from 1.1 million to 1.8 million

(Dominion Bureau of Statistics 1953; Dominion Bureau of Statistics 1961; Dominion Bureau of Statistics 1962). (By comparison, it had only expanded from .9 million to 1.1 million during the preceding ten years.) Virtually all of the growth during the twenty-year period from 1941 to 1961 occurred outside of the city center, in the peripheral municipalities. It was the need for coordinated policymaking in the expanding periphery that led policymakers to create Metropolitan Toronto in 1953, a municipal federation to which several of the governance functions of the thirteen individual municipalities were transferred. Specifically, Metro Toronto was put in charge of the capital-intensive government projects associated with urban growth for which coordination was difficult—metropolitan parks, arterial roads, public transportation, and sewage treatment (Colton 1980). The person appointed as Chairman of the Metro Council was Fred Gardiner, a wealthy businessman interested in encouraging local growth and development. Gardiner held this position through the 1950s and oversaw many of the city's large infrastructure developments, including highway expansions and the building of a subway.

At the time the Toronto waterfront, situated on Lake Ontario, was the city's industrial center. Apart from containing the shipping port, “Smogville” was used for waste incineration, heavy manufacturing, and oil and coal storage. The city's cluster of rail yards, too, was only a few blocks north of the harbor. The cargo ships and locomotives constantly passing through the area were fuelled by coal, meaning that they produced substantially more pollution than the liquid-fueled engines that eventually replaced them. Adding to the smog problem created by the concentration of industry in the city center were Toronto's meteorological conditions. Due to the city's geographic location on the shore of Lake Ontario, its pollution is not cleared away at night by sea

breezes as it is in some other metropolitan areas (Anon. 1955b). Instead, cool air blowing in from the lake slips between the warm air over the city and the ground, creating a cap holding in the city's smog. This temperature inversion, while not as severe as what is frequently experienced in Los Angeles, exacerbated the air quality problems typically associated with urban growth.

1.2. Government Responses to Toronto's Air Pollution

By the middle of the 1950s, the city of Toronto's department for addressing air pollution was the Smoke Abatement Board (soon to be renamed the Air Pollution Control Board), which had been set up during the end of the previous decade, and had a minimal infrastructure of air pollution detection equipment. The Air Pollution Control Board (APCB) was comprised of seven men; the head was an engineering professor from the University of Toronto and, of the rest, most were city administrators, and three had positions related to real estate. Specifically, one was from the Property Owner's Association, one was Chairman of the City Property Committee, and another was the City Property Commissioner (Shrag 1954).

The APCB, with the city's chief smoke control officer, had the task of enforcing existing air pollution laws. By July 31, 1953, it had made nearly 60,000 inspections, had found 3,340 violations, 520 of which ended up in court, with an eighty percent success in convictions. However, the APCB's main form of pollution control was "persuasion," as it lacked the authority to regulate many of the city's most prevalent sources of pollution, namely brickyards, smelters, cement factories, tile manufacturers, trains, and cargo ships (Shrag 1954). On the one hand, brickyards, refineries, smelters, and cement and tile factories were granted exemptions from municipal regulation under the provincial City of

Toronto Act (Hamilton 1956). On the other hand, the regulation of trains and cargo ships was under exclusive federal jurisdiction due to (a) a 1908 standing order by the federal Board of Transport Commissioners giving railways immunity from anti-smoke bylaws, and (b) the 1867 Constitution Act leaving the authority to regulate navigable waters in the exclusive domain of the federal government (Davey 1956; Editorial 1956c; Braithwaite 1955c). The remaining policy instrument, persuasion, generally consisted of the APCB sharing information with local industry about how emissions could be reduced at no or low cost, and allowing industry to take whatever actions they wished (Braithwaite 1955a).

1.2.1. Provincial Response

Despite notable successes in educating local industry about the health and economic benefits of modernization, the limitations of this policy mechanism—and the extent and known health consequences of the smog problem—encouraged an exploration of alternative ways of addressing it. Thus, during March 1955, the Ontario legislature set up a nine-man Select Committee to examine the problem of air pollution in the province and recommend solutions (Anon. 1955b; Editorial 1955a). It was comprised of members of the provincial parliament (MPPs) who had the task of researching and creating a report for the Ontario legislature in two years. Over that time, they would travel to forty-two cities and six American states and learn about how they had addressed the air pollution problem, plus hear testimony from over two-hundred scientists about the health effects of pollution, from Toronto's APCB, mayors of other nearby municipalities, and even from housewives frustrated that the pollution was dirtying their drying clothes (Braithwaite 1955c; Braithwaite 1955b; Anon. 1956f; Anon. 1955g; Anon. 1957c; Anon. 1955e).

Initially the committee members openly favored “persuasion” as the means of addressing the exempt industrial sources of air pollution (Braithwaite 1955a). However, visits to other regions with air pollution problems (notably Los Angeles) as well as lobbying by local property-based interests and the city of Toronto, quickly changed their opinions about this (Editorial 1955d; Anon. 1956b). During the first year of the committee's existence, the estimate of the economic cost of air pollution to the city rose from \$10 million to \$60 million, the figure which they reported in their interim report to the legislature in March 1956 (Anon. 1956c; Winch 1959). By the fall of 1955, the committee members publicly supported the creation of a “model smoke control bylaw” which all municipalities in the province would adapt to their own programs, and recommended that jurisdiction over the exempt sources be handed to the municipalities (Anon. 1955g; Anon. 1955h). Having concluded that the worst offenders were those linked to coal-fueled inter-provincial industrial transportation, the committee met with both the federal transport minister and a member of the federal Board of Transport Commissioners in early 1956 to discuss the possibility of regulating these sources (Davey 1956). The Board passed smoke emissions orders for steam locomotives in response, but the Select Committee remained unsatisfied (Hamilton 1956).

In March 1956 the Select Committee released an interim report and, on February 14, 1957, it released its final report to the Ontario legislature. The 25,000 word report called air pollution a “vast, complex, and serious problem” and recommended the establishment of a provincial air pollution commission which would set up air pollution control districts, create standards for these areas, and require the municipalities within the districts to meet these standards (Anon. 1957c; Anon. 1957b; Editorial 1957c; Anon.

1957d). Accompanying this recommendation, the Select Committee presented a draft bill for the commission's creation. It also recommended that the commission deal with the unregulated sources of pollution, namely, the local industrial sources, ships, trains, and domestic incinerators. Due to the jurisdictional ambiguities for ships and trains, the Select Committee proposed two strategies. First, attempt to convince the federal government to regulate these sources. To this end, the Select Committee submitted a draft order to the federal Transport Board with a request that it be passed. Second, regardless of whether the Board acts, regulate the sources provincially anyway and let any jurisdictional issues be sorted out in court (Anon. 1957d).

The response of the legislature was that it did not support handing over the authority to regulate air pollution to the province (Anon. 1957e). Instead, in March 1957, it created a special unit within the provincial Ministry of Health dedicated to finding solutions to air pollution, but with no defined tasks (Editorial 1957d; Editorial 1957e; Anon. 1957i). The following month, the legislature amended the Municipal Act, ruling that it would override the exemptions given to local factories in individual municipalities if the municipality applied for such an exemption (Anon. 1957i; Anon. 1957h; Editorial 1957g). (A revision to the Mining Act at the same time gave the province greater authority over the chimney emissions of smelters, which presumably could be passed on to the municipalities.) The decision to approve or deny these requests was given, in part, to the new air pollution unit within the ministry (Anon. 1957i). Metro Toronto requested this authority immediately, and it was finally granted it after more than five months (Editorial 1957h).

Further legislative action took place the following year, and on March 11, 1958, the provincial minister of health introduced a bill to the Ontario Legislature which would become the province's first air pollution statute (Anon. 1958d; Anon. 1958e; Anon. 1958f). The 1958 Air Pollution Control Act gave the municipalities greater authority to regulate air pollution, including all of the notable exemptions to existing municipal bylaws. This was not terribly important in terms of Toronto's regulation of stationary sources (since the authority to govern these had been granted months earlier) but it was the first time that municipalities had received authority from the province to regulate trains and lake freighters. The special air pollution branch in the provincial Ministry of Health would still exist but not be given any authority beyond the capacity to conduct research. Notably, air pollution remained a municipal responsibility.

1.2.2. Municipal Response

Alongside the actions taken by the provincial government, those by the city government during the same period represent an acceleration of its efforts to address air pollution. Over the second half of the decade the city budget dedicated to air pollution was increased and, with it, so did the number of employees, the sophistication of the monitoring equipment, and the extent of the regulation enforcement.

During 1955, the city's annual budget for air pollution control was frustratingly small for the politicians who wanted the issue addressed. In April of that year, Toronto's Air Pollution Control Board (APCB) requested \$20,000 from the city for a mobile laboratory to study the extent of the problem. It was declined, and the chairman of the APCB resigned after seven years at his post (Macaulay 1955; Anon. 1955i; Braithwaite

1955c). Robert Macaulay, one of the MPPs on the Select Committee, responded to the decision of the city with the following comment to the local media:

The city of Toronto won't spend a cent on smoke control. They will spend I don't know how many thousands on Suite 1735 [a spending scandal involving the former mayor and an expensive hotel room] and they will put up \$4,000 to send the mayor . . . to Greece to try to get the Olympic games here. But when a measly \$20,000 is needed for [a] mobile laboratory, they won't put up a nickel. The city has one car for 10 smoke inspectors. If an inspector goes out on the street car to investigate a complaint it will take three-quarters of an hour to get there. An industry can blow a lot of smoke out of its chimney in six minutes, enough to clean out the fire (Braithwaite 1955d, 7).

However, this quickly changed as the issue became a higher priority for city leaders.

In June 1955, Metro Council (Metro Toronto's executive body) announced that, on January 1 of the following year, it was going to take over the air pollution control program that had formerly been operated by the Toronto municipality (and, to a lesser extent, the other municipalities) in order to expand the effort which, thus far, had been uneven and uncoordinated (Anon. 1955f). Transferring authority to Metro was accompanied by more resources. For 1956, Metro's new APCB's annual budget was \$96,000, a nearly thirty percent increase from the previous year's \$67,000 budget for Toronto's APCB (the other municipalities covered under Metro authority had spent virtually nothing on air pollution abatement) (Anon. 1957j; Anon. 1956d). The size of the APCB staff was increased to twenty six (up from twelve a year earlier), more air pollution inspection and convictions took place, and funds for the mobile laboratory to measure air pollution were finally allocated (Editorial 1956e; Anon. 1956e). This is

notable as it indicates that, even without the expanded regulatory authority that later followed, the city government was already addressing air pollution more vigorously.

In 1957, the APCB's annual budget was more than doubled to \$200,000 and a fleet of cars was added for the inspectors to use (Anon. 1957d; Editorial 1957g; Anon. 1957j). During the spring of that year, the mobile air pollution lab was completed at a cost of \$30,000 (Editorial 1957g; Anon. 1957f; A. Baker 1957a). At the time, the lab was considered one of the most advanced in the continent, and Toronto was soon a leader in research on the effects of air pollution to health and property. It was this equipment that enabled city officials to understand how bad the air in the city actually was (among the worst in North America, as it turned out). By late in the year, the city had been formally granted the authority to regulate some of the exempted industries.

With the manpower and authority to conduct the regulations, the APCB began expanding the scope of the issues for which it would impose warnings and fines. In May 1957, Metro Council passed Air Pollution Control By-law No. 601, prohibiting (a) the discharge of dense smoke for specified periods of time; (b) smoke considered a nuisance or damaging to the property value of another person; and (c) requiring permits for the building or alteration of “fuel-burning installations, including refuse and rubbish incinerators” (Metropolitan Toronto Air Pollution Control Division 1957). A reporter from the *Globe and Mail* discussing the new air pollution lab wrote in September 1957:

An all-out attack against excessive smoke from industrial chimneys is being prepared by Metro authorities. For the first time, officials equipped with powerful telescopes placed on high rooftops on the outskirts of the city will scan the horizon for belching smokestacks. To catch violators the officials will be in direct two-way communication

with a number of radio cars which will be dispatched to the scenes of offenses (A. Baker 1957a, 17).

Shortly thereafter, backyard and building incinerators; smelters; brickyards; heavily polluting trucks; school buildings; the Toronto Transit Commission; municipal, provincial, and federal government buildings; and even provincial parliament buildings were the recipients of warnings and fines (Anon. 1957k; Anon. 1958b; Anon. 1958c; Anon. 1958o; Anon. 1958p; Anon. 1958j; Anon. 1959a; Anon. 1959d; Editorial 1959b; Anon. 1959h). This “all-out attack” lasted into 1959. During the second half of 1958, the APCB's staff was further expanded, from twenty-six to thirty-four and, in 1959, to forty (Anon. 1958o; Anon. 1958g; Archer 1959; Anon. 1958i). So many charges were laid (nearly twice as many as in New York City during a one-year period) that court officials set up a special “air pollution court” to sit every week for only air pollution cases (Anon. 1958o; Westall 1958).

Fines were also handed out to railroads and freighter companies, thanks to the authority to do so granted under the 1958 Air Pollution Control Act. The Canadian Pacific Railroad received a fine and paid it, while the Canadian National Railroad (CNR) appealed the fine it received for emitting air pollution from its roundhouse to a higher court on the basis that the city lacked the authority to issue it (Westall 1958; Anon. 1958p). Charges were filed against Canada Steamship Lines in 1959 for violating By-law 601, and the issue similarly ended up in court over the question of jurisdiction (Anon. 1959e).

The combined efforts of the provincial and municipal governments to abate air pollution were successful and, by the spring of 1959, the air in Toronto was appreciably cleaner. Data from monitoring stations in the most heavily polluted parts of the city

indicated a twenty-nine percent drop in air pollution from one year earlier (Anon. 1959b). Provincial and municipal officials openly credited Metro's aggressive efforts for cleaning the city up and argued that the problem of water pollution would soon be addressed just as successfully. Local media, so critical of the provincial and municipal governments actions on air pollution over the previous several years, were celebratory as well – the *Globe and Mail* said the effort was “nearing victory” (Anon. 1959g, 5). Most tellingly (and similar to Los Angeles at the same time), local industry was bearing heavy costs through the required implementation of equipment to lessen emissions. Although the abatement efforts undertaken just a few years earlier had involved helping companies to learn about the economic benefits of lessening emissions, the air pollution authorities were now requiring polluters to undertake measures which did not contribute favorably to the company’s bottom line. In expressing the challenge of enforcing By-law 601, Metro air pollution chief Harry A. Belyea said “the only difficulty is that expensive control equipment is unproductive to the company” (Anon. 1958g, 11). Yet the city enforced its regulations with vigor.

1.3. Property-based Interests and Toronto's Air Pollution

The history of early air pollution governance in Toronto is one of multiple individuals and organizations – MPPs, municipal civil servants, university professors, industrialists, local businesses, and housewives frustrated about having to redo their wash – engaging in discourse over what, if anything, should be done to address the issue. A trustworthy account of what transpired cannot deny the importance of the actions of Robert Macaulay or Alfred Cowling (influential members of the Select Committee); air pollution chief Harry Belyea, who led the department's effort to control the polluters;

Ross Clark, chairman of the Metro Works Committee which oversaw the air pollution department; E. A. Alleut, head of the APCB who pushed for the mobile lab; and Frederick Evis, the scientist at the helm of the air pollution unit within the Ministry of Health. These individuals wrote editorials in favor of their positions, testified about the deleterious health effects of air pollution in front of the legislature, and were on the front line of the effort to control the sources. A narrative focusing on the significance of these individuals could follow the example of other studies of environmental politics and discuss their roles as “norm entrepreneurs” who convince other policymakers of the importance of the issue or, potentially, as “knowledge brokers” or an “epistemic community” in filtering scientific knowledge as input for policy decisions (Finnemore and Sikkink 1998; Litfin 1995; Kingdon 2002; Haas 1989). However, as this case study aims to shift the focus to the city’s property-based interests, below it shows that, like in Los Angeles, two of Toronto’s most influential actors in clean air policy were the local growth coalition and the local metropolitan newspapers. There is a common observable behavior among both classes of actors, namely, presenting information about the extent and consequences of air pollution and lobbying the provincial and municipal governments for specific actions to address the issue. First, however, to frame the context within which these property-based interests pursued their policy objectives, it is necessary to briefly describe the industrial actors with opposing goals.

While “industry” is a broad classification with diverging interests among those befitting this label, manufacturers which locate within urban areas are unique in that they share common benefits for doing so. They look to urban areas as production hubs which facilitate access to materials, transportation infrastructure, professional services, and a

diverse labor pool, at a minimal cost. The influence of these actors over local politics is due in no small part to the understanding that economic growth (at multiple scales) is partly dependent on their success, and thus lawmakers are inclined to take their policy prescriptions into consideration. During the middle to late 1950s, the most important political pressure group representing manufacturers was the Canadian Manufacturers Association (CMA), headquartered in Toronto with an office in Ottawa. This organization lobbied the federal government on trade, labor, immigration, and monetary and fiscal policy with the dual objective of creating the conditions for the low-cost production of goods and expanding the domestic and foreign markets for their consumption. In doing so, it participated in the Canadian trade delegation and submitted policy briefs to the prime minister with proposals on a range of issues. One of the CMA's primary goals at the time was arresting the pace of manufacturing costs which had risen faster than consumer prices and reduced corporate profits from earlier in the decade. The possibility of mandatory air pollution abatement programs in Toronto, whether undertaken at specific manufacturing facilities or by railroads or lake freighters, resonated with the concerns about the profitability of Canadian manufacturers. Thus, the efforts by Toronto's property-based interests to promote their policy solutions took place within somewhat unfavorable economic circumstances and amid opposition by the national manufacturing industry to which one city's air quality was of low priority (Anon. 1956g; Anon. 1956a; Armstrong 1957; MacDonald 1957; Anon. 1957l; Armstrong 1958; M. Harrison 1958; Winch 1957).

1.3.1. The Metropolitan Toronto Civic Conference

Several property-based interest groups lobbied for air pollution relief during the 1950s. The Don Mills Community Association opposed industrial development in its area over concerns about air pollution and the resulting declining property values, for example, the Melody Rd. Ratepayers' Association testified to the provincial Select Committee about the problem, and the Broadview-Queen Home Owners' Association distributed a petition over a wide area with the objective of mobilizing inspectors (Anon. 1957g; Anon. 1956b; Gibb 1958). But the largest and most effective organization pushing air pollution abatement in Toronto was the Metropolitan Toronto Civic Conference, a coalition of local growth-promoting associations.²⁶ This organization had a long history as a local growth coalition, first as the Toronto Civic Guild from 1910 to 1922. Under this name, the organization promoted urban development by successfully advocating the extension of one of the main commercial streets (Bay Street) and the downtown viaduct (the Bloor Street Viaduct). This was followed by the Toronto Reconstruction Council in 1943, which became the Civic Advisory Council in 1947. During the 1940s, a long list of Toronto elites participated in this organization, contributing to its influence and productivity (Scrivener 1959). By the mid-1950s, its name had changed to the Metropolitan Toronto Civic Conference (MTCC), and it was engaged in lobbying the local government on a range of urban issues related to economic

²⁶ As of June 1, 1959, the MTCC counted the following associations among its members: the Community Planning Association of Canada, Metropolitan Toronto Branch; Coordinating Committee of Toronto Ratepayer Associations; Etobicoke Civic Advisory Committee; North York Central Community Council; Toronto and District Labor Council; and the York Township Council of Ratepayers. Also involved, by as a consultant, was the Central Ontario Chapter of the Town Planning Institute of Canada (Scrivener 1959).

development. These included park development, public transportation, housing, and urban renewal. Not only did the MTCC lobby for policies which promoted economic growth, it was also financed by local businesses and promoted by the business-friendly *Globe and Mail*. So influential was the MTCC in lobbying for air pollution abatement that, in 1958, one of its members was appointed to the Air Pollution Appeal Control Board of Metropolitan Toronto (Scrivener 1959).

Among the MTCC's activities were performing research on the economic effects of air pollution and conducting symposiums on air pollution attended by Toronto's politicians and business leaders. During one such symposium, held during May 1959, the MTCC brought the Air Pollution Control Association president from the United States to speak, and revealed the results of research that it had already made public before—through both the MTCC's and the Select Committee's 1957 reports—that air pollution was costing Toronto over \$60 million annually in building upkeep, labor, and other expenses (Winch 1959). This symposium was also attended by Toronto air pollution control chief H.A. Belyea, the president-elect of the Metropolitan Toronto Board of Trade, the vice-chairman of the coordinating committee of the Toronto Ratepayers Association, as well as the assistant director of air pollution studies from the Ontario Research Foundation. The Works Committee of Metropolitan Toronto formally expressed its appreciation to the MTCC for running the symposium “for the interest shown by such organization in air pollution control matters and for the very comprehensive investigation made by the Utilities Committee of the Civic Conference regarding air pollution in Metropolitan Toronto” (Scrivener 1959, 6).

The influence of the MTCC on the Select Committee was so great that the MTCC's policy recommendations were reflected in those by the Select Committee with little variance. In February 1957, the MTCC approved and released a report with the results of its own research on the effects of air pollution, and with policy recommendations (Anon. 1957a). Namely, it reiterated the results of its research on the costs of air pollution in Toronto and argued that provincial legislation should designate control areas in Ontario, each with a control ordinance, and with a provincial advisory body and research agency for each control area. Air pollution regulations would thus be in the hands of provincial, not municipal, authorities. In addition, all exceptions to existing rules should be overturned, such as those related to factories, smelters, steamships, and trains. Sharing much in common with the Select Committee's final report to the legislature, the MTCC's report was released one week earlier.

Local enforcement activity was also influenced by the MTCC. A couple of months after releasing the report on provincial legislation recommendations, it released another with policy prescriptions about garbage incineration. In mid-1957 garbage disposal was still handled by the individual municipalities, but Metro Works Commissioner Ross Clark had suggested that Metro might have to resort to incineration if it were to take on that responsibility. The MTCC responded with information about the costs of incineration for the city and recommended policies about how any incineration should be carried out (Schrag 1957). More specifically, it contained recommendations banning the use of open incineration fires and about the technology that should be employed to address the pollution. This report coincided not only with the city's expanded authority to regulate incinerators, but with a subsequent crackdown on their use

resulting in fines and the required installation of equipment to reduce the fly ash resulting from their use.

1.3.2. The Print Media

The other category of property-based interests key to Toronto's air pollution abatement effort was two of the city's local newspapers, the *Toronto Daily Star* (*Star*) and the *Globe and Mail* (*Globe*). Despite the left-leaning ideology of the *Star* and the business-friendly tendencies of the *Globe*, the divergent orientations of these two newspapers on social issues appear to have had no bearing on how they addressed the city's air pollution problem. Both of these newspapers offered thorough coverage of the extent and costs of air pollution, the political efforts to address it, and frequently editorialized on the topic. As air pollution became acute during the mid-1950s, the newspapers began citing experts on the health effects of the problem. Articles contained statements from scientists who claimed that the urban area's relatively high incidence of lung cancer was caused by air pollution. Furthermore, air pollution also reportedly caused sudden death, cardiovascular disease, mental depression, as well as explained why people living in Toronto had paler skin than others (Anon. 1955b; Braithwaite 1955c; Braithwaite 1955a; Anon. 1956c; Anon. 1957d; Editorial 1957g; Editorial 1955e; Anon. 1958g; Anon. 1955c; Editorial 1957b; Anon. 1958m; Anon. 1955d; Editorial 1955b; Anon. 1958a; Bryant 1958; Anon. 1958n; Anon. 1958k; Editorial 1958d). Numerous other stories trumpeted the hardships of people forced to re-wash clothes, repaint houses, or buy new stockings since pollution was destroying them (Anon. 1956f; Braithwaite 1955d; Anon. 1955k; Editorial 1956a; Anon. 1958h; Editorial 1959a). And both newspapers presented front-page stories on the politics and problems of air pollution, as

well as several special issue-related features containing more than one article and a number of photos.

On Monday November 21, 1955, the *Star* made air pollution the topic of its “For a Better Toronto” campaign, containing two front-page articles on air pollution highlighting the extent, economic costs, and health risks, of the problem. The headline article called sulfur dioxide “deadly” and declared that “Possibly only Los Angeles can top us when it comes to air pollution” (Braithwaite 1955c, 1). This article continued to page seven, which was dedicated entirely to air pollution—three more articles and three large photos, one of which featured a child under a Booth Avenue street sign writing the word “SMOG” on a car covered in deposited pollution. The caption beneath the photo contained the sentence: “Chemical pollution has been serious enough in some parts of Toronto to eat holes in the paint of automobiles” (Braithwaite 1955d, 7). The final article in the collection is a call to arms for the local business community and politicians to gird for a battle sure to reap economic rewards. Using the example of how Pittsburgh cleared its air despite resistance from industry, it illustrates the economic and political advantages of clean air policy for real estate and politicians alike. The article describes how industrialists made an election issue out of their opposition for smoke control in their effort to defeat Mayor David Lawrence, yet the mayor won easily. It further shows that the subsequent smoke abatement brought about formerly suppressed business investment, and was a necessary condition for downtown redevelopment. Underscoring the importance of clean air policy for local growth, the article begins and ends with the same quote from a member of Pittsburgh’s elite growth coalition, the Allegheny Conference on

Industrial Development: “Any city that doesn't control its smoke problems as early as it can will regret it” (Brehl 1955, 7).

The *Globe* printed front-page stories of the informal and formal recommendations of the Select Committee on four occasions (Hamilton 1956; Anon. 1955g; Anon. 1957b; Anon. 1957d). These stories underscored the extent and costs of air pollution in the city and discussed the political obstacles to addressing the problem. The article reporting the release of the final report discussed its recommendations in detail and quoted from it extensively. One excerpt quoted on page one of the February 15, 1957 *Globe* read: “Everybody . . . must be made aware of the immensity and importance of this problem Air pollution is everybody's concern because it may be anybody's funeral” (Anon. 1957d, 1). Accompanying the article were two others printed in the same edition, one detailing the amount of research behind the report and accompanied by a photo showing smoke belching from smokestacks and clouding the sky, and an editorial exhorting the legislature to act on the Select Committee's recommendations (Anon. 1957c; Editorial 1957b). Later that year, in October 1957, the *Globe* published another front-page article on air pollution, this time to report that Toronto had recently experienced its “worst ever recorded” smog, which “for three hours almost equaled in density 1953's death-dealing London smog [sic]” (A. Baker 1957b, 1).²⁷ And in May 1959, when the MTCC held a symposium on the costs of air pollution in Toronto, a reporter at the *Globe* responded with the assertion that the effort to address air pollution “needs a business leader or a financial syndicate that ‘thinks big,’ and who can put more punch into the fight. If this

²⁷ The year of the London smog incident was incorrectly reported as 1953; the actual date of the Great Smog was December 5-9, 1952.

leader were successful . . . a good proportion of the air pollution in the business section could be eliminated, and the crusade would be half won" (Winch 1959, 29).

These smog-related articles kept newspaper readers aware of the specifics of the issue, but it was through the newspapers' page-six editorials that they contributed to policy development by making recommendations and arguing for the policy alternatives they supported. In the wake of the creation of the Select Committee, both newspapers began publishing editorials declaring Toronto's smog problem dangerous and comparing it unfavorably to other North American cities (Editorial 1955d; Editorial 1955e; Editorial 1955b; Editorial 1955c). By fall 1955, they endorsed provincial legislation to give Ontario's Ministry of Health the authority to create uniform standards across the province so that industry would not be able to escape to cities with more relaxed regulations. The editorial pages also took aim at the exempt industrial sources (especially the transportation sources) and, in early 1956, began requesting that they be regulated and their exemptions removed (Editorial 1956c; Editorial 1956e; Editorial 1956a; Editorial 1956b; Editorial 1957a). The April 28, 1956 *Globe* stated:

The Provincial Government has the power to bring the exempt industries into line; and has been requested to do so by the Air Pollution Control Branch. It can hardly refuse, in the face of the damning evidence being amassed by its own air pollution committee.

Buttressed in these ways, the Pollution Control Branch could take the action necessary to end the shameful situation which permitted seventy-seven tons of ash and soot to fall in one square mile on the Keating Street waterfront last November (and not much less in the downtown area itself). The present regulations are a mockery. Until they are changed, Torontonians are truly living in the Dark Ages (Editorial 1956d, 6).

When the legislature initially failed to implement the policy recommendations backed by the newspapers and proposed by the Select Committee, the editorial sections of both newspapers were sharply critical (Editorial 1957c; Editorial 1957d; Editorial 1957b; Editorial 1957e). In the *Star's* words, March 11, 1957:

The legislature's committee on air pollution and smoke control brought in a 25,000 word report a month ago. It makes virtually the same recommendations offered in its interim report a year ago. Has the government acted, for instance, to give the province anti-smoke legislation with teeth in it, as recommended and requested by dozens of groups, including the Metropolitan Toronto Civic conference? No. Nothing at all has been done except to hold more meetings (Editorial 1957c, 6).

And the following month, when the newly-created air pollution unit in the Ministry of Health was given the task of granting exemption overrides to the municipalities on request (thus enabling Toronto to regulate the formerly exempted industries), the *Star* called it “a weak and faltering step toward air pollution control” (Editorial 1957f, 6).

On top of pressuring the provincial government for the newspapers' preferred policy alternatives, the *Globe* and the *Star* encouraged the municipal government to make the most of its new regulatory capacities (Editorial 1959b; Editorial 1958d; Editorial 1959a; Editorial 1958b; Editorial 1958a; Editorial 1958c). On the issue of the jurisdictional ambiguity of the exemption overrides for the transportation industry, the *Globe* wrote on August 7, 1958:

Let Metro lay charges against offending railways and shipping companies. If the Metro law stands up, all well and good, it can be applied to the fullest extent; if it doesn't, then Metro can take steps to obtain from Parliament the necessary authority to prosecute. . .

Now is the time to bring matters to a head. With its existing gaps, our pollution law becomes a farce. It is time the farce was ended (Editorial 1958a, 6).

Also frequently mentioned was the need to reduce pollution from automobiles, which Toronto had limited ability to control (the California Air Resources Board was negotiating with the automobile industry for relief on this front); yet it still could use its smoke bylaw to address the most egregious offenders.

Common among the editorials throughout the second half of the decade was the theme that air pollution exacts an economic cost on the city, and that cleaning it up is necessary for Toronto's general well-being (Editorial 1955e; Editorial 1956d). Their focus on the rhetorical symbols of lung cancer and economic loss (with specific dollar amounts) arguably indicates what they viewed as important for mobilizing support for their cause. As the *Star* vividly stated on October 21, 1957, a few days after the worst recorded smog event in the city's history:

But do we have to wait until people die before the provincial government takes action to permit Metro authority to tackle this menace fully? . . . The air is so bad that certain industries such as manufacturers of delicate electronic equipment have been forced to move outside the city. Food industries have been advised not to locate here because their products would be contaminated. The area is just not clean enough (Editorial 1957h, 6).

Accompanying such observations was the opinion prominent among Toronto's property-based interests, and expressed by the *Star*, that "It is cheaper to control and eliminate smoke than it is to breathe it" (Editorial 1957g, 6). Numerous other editorials made the same point: as expensive as controlling air pollution is, the alternative of managing the consequences is far more expensive.

Toronto's metropolitan newspapers thus served as among the more influential voices calling for political measures to address air pollution. The extensive coverage they gave the issue and their frequent editorials calling for more aggressive action likely had an independent effect in itself but, more significantly, it represents the importance that Toronto's property-based interests placed on air pollution relief. Nevertheless, despite being able to mobilize local and provincial governments to address air pollution, the MTCC, print media, and other property-based interests were not able to exert as much influence over the provincial government as they wished. After all, if the MTCC and the newspapers were so effective, how is it that their recommendations were not all followed by the legislature, in particular that Ontario assume responsibility for regulation? One of the main reasons the property-based interests lobbied for air pollution regulation to be handled provincially was so that an industry could not threaten to relocate to a city with lower standards. Left in the hands of municipalities and without a province-wide authority, industry might potentially move to cities in the province more influenced by interests unconcerned with air quality. This was not an unreasonable concern—it was not until 1967, when air pollution regulation was finally placed within the jurisdiction of the Health Ministry, that smelters in certain locales were finally placed under control orders.

The influence of the MTCC and the print media must be weighed against that of the manufacturing industry, which was also influential in provincial politics. The firms representing this industry maintained lobbies to defeat any attempt at control. Select Committee member Robert Macaulay reported that “They simply threatened the city that they would move away and Toronto would lose their taxes” (Anon. 1955g, 1). Indeed, the policy outcome of 1957-8 is consistent with the position of the Canadian

Manufacturers Association (CMA), as recommended to the Ontario legislature in December 1956. In response to the interim report released by the Select Committee and the lobbying of the local property-based interests, the CMA requested the creation of a provincial advisory body for air pollution which, it said, should precede any legislation. Other types of pollution should be addressed provincially, the CMA had argued, but air pollution should remain in the exclusive domain of the municipalities (Anon. 1956h). The position of the CMA may help explain how it is that water pollution regulation was handled by Ontario during this period, yet air pollution formally remained in the hands of the municipalities until the late 1960s.

2. Acid Rain in Ontario, 1970s and 1980s

Although political efforts to address Toronto's air pollution during the 1950s were successful, the fact that the authority remained in the municipalities meant that areas in which local interests did not successfully mobilize to address the problem would remain under-regulated. Sudbury, Ontario, for example, a small town whose economy was based almost entirely on the Inco smelter, stood little chance of forcing the smelter to take measures to reduce its pollution.

In response to the need to control air pollution outside of Toronto, the province transferred regulatory authority to the provincial Ministry of Health and passed the Air Pollution Control Act of 1967. With its newly granted authority, the Ontario Ministry of Health issued a control order in 1970 requiring Inco, Ontario's largest polluter, to reduce its sulfur dioxide emissions to 750 tons per day. Inco ignored the control order (it was eventually rescinded in 1978) yet, in order to appease the Ministry of Health, built the Inco Superstack in 1972. At 1,250 feet, the Inco Superstack was the tallest freestanding

structure in the country. It enabled Inco to disperse its fumes so that they did not land in Sudbury, thus relieving the city from the devastating damage it had suffered for over twenty years (Anon. 1973a; Anon. 1971).

While the intended outcome of the Inco Superstack was air pollution diffusion, the unexpected result was that the pollution travelled southeast along the coast of Lake Huron to the Muskoka region. The District Municipality of Muskoka is an area comprised of six individual towns and is a popular vacation spot for Toronto residents and many Americans who own cottages in the region. Known as “cottage country,” this region of just over 50,000 permanent residents has an additional 100,000 property-owning seasonal inhabitants who, in many cases, occupy mansion-like cottages which have been handed down for many generations. These vacationers, along with another 2 million annual visitors, travel to Muskoka mainly in the summer months and engage in recreational activities in the area’s roughly 1,600 lakes.

As is typically the case with air pollution, the effects (in this instance, the acidification of the Muskoka region’s lakes) were observed by both scientists and local residents. While many residents wrote letters to the provincial government complaining about the loss of aquatic wildlife, the Muskoka news media were initially silent on the issue for fear of frightening away tourists (Munton 2004). In addition, numerous studies were conducted throughout the 1970s, by the Ontario and Canadian governments and university-affiliated researchers. The scientific knowledge gleaned from these was not sufficient to generate enough political will to address the problem, even though the results of some of these studies appeared in high-circulation Canadian newspapers.

The history of the science of acid rain in Ontario has been told already by Don Munton (2004), so this section shall briefly summarize several of the key events. The initial observation of acidified lakes in Ontario took place throughout the 1970s in Sudbury under the inter-departmental Sudbury Environmental Study (SES). This project was aimed at finding scientific evidence to support the province's longstanding and unsuccessful effort to encourage Inco to reduce its emissions. Although it was underfunded and did not successfully provide a strong scientific case for emissions reductions, the study found that 140 lakes in the Sudbury area had been substantially acidified.²⁸ Another study, the Lakeshore Capacity Project (LCP), initiated in 1974 by the Ontario Ministry of Housing, used a research station in the region of Dorset, Ontario, over 100 kilometers from Sudbury and northeast of Toronto. Aimed at assessing the environmental limits on cottage development, the study found that the lakes in the Dorset area had a higher than normal level of acidity, as did the precipitation. When considered together, and in the context of acid rain research already conducted in Scandinavia about the acidification of Swedish lakes, and research by Canadian scientists during the 1970s establishing a link between sulfur dioxide deposition, acidification, and the loss of aquatic wildlife in Ontario, the findings of the SES and LCP suggested that Ontario was experiencing an emerging acidification problem. What placed the issue in the spotlight was a front page article in the June 7, 1978 edition of the *Star*, written by Howard Ross, titled "Rain of Pollution Killing our Lakes." Drawing on data from the SES and LCP

²⁸ Don Munton (2004, 147) explains that "The government scientists involved [in the SES] all agreed in 1979 that they lacked the scientific information to justify these reductions. They were not able to make authoritative descriptive statements of the sort that 'acidic precipitation in northeastern Ontario is due to the emissions from Sudbury x percent of the time.'"

studies, Ross's article declared that airborne pollution from a range of sources was destroying the lakes in the popular Muskoka-Haliburton tourist region. It spoke of the potential damage to the Ontario tourist industry and of the extreme measures (depositing crushed limestone in the lakes) being considered to address the problem (Howard 1978). This article received a substantial amount of attention within government and the tourist industry and, for the following decade, acid rain was a popular and politically salient issue in Ontario.

The scholarly literature on the efforts by the Ontario government to address acid rain is concentrated within the writings of a few people. Most significant of these is Douglas MacDonald's (1997) doctoral thesis on the industry-province negotiations over the issue. Impressive for its depth and accuracy, this account largely restricts itself to an analysis of the interactions of a specific selection of political actors, namely the industrial actors, the Ontario Ministry of the Environment and the federal Ministry of the Environment. MacDonald's (2007) subsequent work on the role of business and environmental politics in Canada, similarly, does not dwell on the existence of politically-relevant property-based interests; rather, MacDonald appears interested primarily in examining the influence of the manufacturing, energy, and resource processing and extraction industries.

The other author who has written extensively on acid rain in Canada is, as previously mentioned, Don Munton, whose research focuses on the development of the scientific evidence (Munton 2004), the media coverage (1995), and the development of the Canada-US bilateral regime (1997; 2007; 1999). Munton's research has discussed the importance of the symbolism of the Muskoka region for Canadians and has illustrated the

extent that the *Globe* covered the issue, but his primary concern has been to create an exhaustive account of the bilateral arrangement. As such, he has not in any of his writings framed the acid rain issue in such a way as to highlight the importance of Ontario's property-based interests in pushing for relief from acid precursors. Lastly, an individual book chapter by Doern and Conway (1994) and an early edited volume by Schmandt and Roderick (1985) provide broad overviews of the domestic and international dimensions of the acid rain issue in Canada. These contributions are useful due to their discussion of the wide formal institutions implicated in the policy process for addressing acid deposition, but are not sufficiently focused as to consider the source of the political incentive to do so.

In what follows, this case study argues that Ontario's property-based interests were decisively important to the political efforts to address acid rain in Ontario during the late 1970s and 1980s. The powerful industrial interests had designed weak regimes within existing Ontario law, and the Ontario Ministry of the Environment by itself would likely not have changed this in response to scientific information about acid rain. The fact that the fumes from these sources were harmful for human health and the environment had been known for many years, thanks to the damage produced in the Sudbury area by its smelters since the beginning of the twentieth century. The difference this time was the realization by the province's property-based interests that this damage was harmful for economic growth and well-being, and the interests' actions to pressure the province for clean air policy. In doing so, these interests pushed for specific caps, negotiated directly with the polluters, presented and commented on scientific evidence about the costs of the problem, and attempted to arouse public opinion to further pressure

the provincial government. In what follows, this case study begins by presenting a time line of the political efforts within Ontario to address acid rain, beginning in the late 1970s and ending with the creation of Ontario's Countdown Acid Rain. It then briefly discusses the industrial interests and provides an account of the property- and recreation-based growth coalition and local newspapers' influence on policy process.

2.1. Political Efforts to Address Acid Rain

The provincial health-based control order on Inco in 1970, and a 1969 control order on the smaller Falconbridge smelter (also in Sudbury) were aimed at addressing Sudbury's local air pollution rather than acid rain. As the Inco Superstack had improved the ambient conditions in Sudbury substantially, and Inco could challenge the control order on that basis, the provincial government decided not to pursue the reductions required by December 1978. Inco informed provincial officials in 1976 that they could not expect sulfur dioxide reductions, a fact which the government publicly acknowledged in December 1977. The following year, at the end of July 1978 and shortly after the printing of Howard Ross's article in the *Star*, Ontario's environmental minister formally rescinded the control order. The fallout was substantial; as Don Munton (2004, 153) reports:

In contrast to the muted response in 1973 when Falconbridge had similarly been granted an extension on an earlier deadline, the response this time was anything but muted. A chorus of public criticism arose. A small band of environmental activists, calling itself the "Inco –stinko faction," invaded the offices of the provincial Ministry of Environment (MOE) and let off a sulphur candle. The provincial legislature took up the issue and the opposition party made as much of the controversy as it could.

Within weeks, the environmental minister was replaced (the regulation of air pollution had been shifted to the MOE from the Ministry of Health in 1972). From a political standpoint, this is where the acid rain story in Ontario begins.

The Canadian political effort to address acid rain during the late 1970s and throughout the 1980s was two-pronged. First, the Ontario and federal governments blamed the United States and tried to negotiate an abatement agreement while lobbying the US federal government and engaging in a propaganda effort aimed at swaying American public opinion (Anon. 1981a; M. Keating 1981d; M. Keating 1981c). The avenue was arguably less successful for the Canadians since, as discussed in the previous chapter, the American acid rain program was created (under the 1990 CAAA) for reasons related to domestic politics, not Canadian pressure. Furthermore, as discussed in the next chapter, the 1991 Canada-US bilateral agreement has proven ineffective since it did not mandate reductions that were not already underway and, more importantly, subsequent to its creation it has not been used as the regime of choice for political actors to address grievances related to pollution transport. Throughout the 1990s and 2000s, the CAA turned out to be the highly effective regime of choice since it mandates rulemaking and other activities and allows certain political actors to sue the EPA when this is not done adequately.

Second, the Canadian government decided to clean up its own backyard by reducing emissions from the sources on its side of the border. The large majority of these reductions occurred in Ontario, where Inco and Ontario Hydro (the province's public utility and second-largest polluter) produced most of Canada's acidic emissions. Here the federal government, arguably lacking the statutory authority and political incentive to

regulate the pollution sources itself, publicly and privately pressured the province for pollution reductions on what had become a politically salient and symbolic issue.

The government response to acid rain in Ontario began in February 1979, when the Ontario Legislature's sixteen-member standing committee on resource development conducted hearings on the issue, in which the environmental minister, Inco representatives, and many experts testified. The committee was told that at least 48,000 more lakes, including those in the Muskoka region, were threatened and that half would be dead within a decade; most of the pollution comes from the United States even though Canada produces quite a bit; northern Ontario lacks limestone to naturally buffer the lakes against the effects of acid deposition; dead lakes will adversely affect the tourism industry and broader economy; and that acid rain is damaging Ontario's agriculture industry (Howard 1979a). In addition, an Inco representative warned committee members that the cost of any sulfur dioxide reductions at Sudbury "would have to be measured in billions of dollars" (Howard and Perley 1980b, A10).

On the basis of this testimony, the committee prepared a comprehensive report on acid rain which was tabled in June 1979 (Bryden 1979). In it, the committee recommended that Ontario immediately take its own measures independent of what the US government did. The report called for a new control order on Inco reinstating the original target of 750 tons of sulfur dioxide per day and for all coal-fired power plants in Ontario (old and new) to be required to install modern abatement technology to limit the release of acid-causing substances. As one of the MPP committee members wrote in the *Star*, "We don't expect the Americans to do the same, unless we adopt such a policy here" (Bryden 1979, A9).

Around the same time, the federal government, responding to public opinion, began posturing over the issue. In August 1979, the federal environmental minister announced that the federal government would unilaterally set air pollution standards if the provinces (Ontario, in particular) failed to act to address the problem. (In Canada, environmental regulations have typically been issued provincially, but this is a norm rather than a constitutional imperative). He had been negotiating bilateral air pollution measures with the United States, and in this instance he insisted that Ottawa would require the provinces to act regardless of whether the Canada-US negotiations yielded bilateral commitments (Sheppard 1979).

In October 1979, the Bilateral Research Consultation Group on the Long-Range Transport of Air Pollutants (BRCG), a fact-finding committee formed by the US and Canadian governments to look into the acid rain issue, released its interim report (Howard 1979b; Munton 2007). Among the findings of the report was that most of the pollution causing the acid rain problem in Canada is actually produced in the country, in particular in Ontario (Editorial 1979c). It also underscored the damage acid rain can do to the soil used by crops and forests, as well as the damage it can cause to the built environment. It said that “Damage to metals, paints, masonry, statuary and other objects can affect the quality of life as well as result in substantial replacement costs estimated to be hundreds of millions of dollars annually” (quoted in Editorial 1979d, A8).

The following day, Ontario Hydro, the province’s second-largest polluter after Inco, inserted itself into the policy debate by releasing a study detailing the extent of the pollution its power plants released at the time (0.5 million of the 2.2 million tons sulfur dioxide released in Ontario annually) and the measures which would need to be taken for

reductions. Ontario Hydro had been opposed to the installation of expensive scrubbers, and indeed the report suggested switching to nuclear power as a potential solution (Howard 1979c).

By April 1980, despite pronouncements to the contrary the previous year, MOE minister Harry Parrott announced that Ontario would finally begin to take measures to lessen its sulfur dioxide emissions (M. Keating 1980a; M. Keating 1980b). Saying that his policy reversal was due to his awareness that “people are more and more concerned about the environment . . . My resolve is backed by the will of the people,” in May 1980, Parrott released a draft control order requiring Inco to reduce its sulfur dioxide emissions by 25 percent to 2,500 tons per day immediately, and to 1,950 by the end of 1982 (Speirs 1980, 5). Furthermore, he announced the creation of a federal-provincial task force to examine the feasibility of further emissions controls (thus, arguably, lessening the MOE’s reliance on data provided them by Inco) (Editorial 1980c).

Within two months, Inco announced that it would not meet these targets and argued that doing so would force it to reduce its capacity and encourage competitors (Moses 1980). The CEO of Inco publicly stated that the firm was already meeting the reduced emissions levels of 2,500 tons per day, but that a cap would prevent it from responding to increases in market demand (Macdonald 1997). Under existing legislation, a control order by environmental minister could be appealed to the Environmental Appeal Board and challenged in court. Inco indicated that it would pursue this option and, in doing so, would again effectively ignore provincial efforts to regulate it. In response, another control order was issued in September 1980—this time an Ontario cabinet order—which could not be legally ignored and which otherwise contained the same

reduction requirements (Editorial 1980g). Further, Inco was required to reduce sulfur emissions to 1,950 tons per working day by 1983.

Also during the summer of 1980, Canada and the United States signed the Memorandum of Intent (MOI) on acid rain control. In it, the countries established work groups to study the problem and committed to negotiate a binding treaty for acid rain reductions. However, the event was overshadowed by the decision of the Carter Administration to increase its use of coal power in response to anti-nuclear public opinion after Three Mile Island and the oil shortage experienced by the United States at the time. So action by the US to reduce pollution flows into Canada seemed unlikely for the near future. And as one US official put it in reference to the upcoming presidential election, "This all goes to hell if Ronald gets in there" (Martin 1980b, 1).

Following Inco's actions, Ontario Hydro also committed to reductions. In 1980, federal studies indicated that the utility could cut its annual emissions of nearly half a million tons of sulfur dioxide in half using existing technology, and that the increase in costs would only result in a ten percent increase in utility rates (Howard 1980). Following the study, the Ontario energy minister announced that he would report pollution control plans by early 1981. In January 1981, Ontario Hydro was ordered to reduce emissions by forty-two percent over the following nine years (Editorial 1981a; Perley and Hurley 1981). (However, these reductions were planned to decrease only after thirty percent annual increases during 1982 and 1983, before the technological changes were to be made.) With an estimated cost of \$500 million, the plan was to require the utility's highest-polluting plants to install scrubbers, including Nanicoke, Hydro's largest coal-fired plant. In early 1982, Ontario Hydro announced a plan to run a

\$800 million cable under Lake Erie in order to sell over 1,000 megawatts a year from Nanicoke to New Jersey (Ward 1982).²⁹ However, following a substantial public backlash (discussed below), this plan was scrapped (Peterson 1982; Editorial 1982b). The following summer, in June 1983, Ontario Hydro announced that the construction of several new nuclear power plants would enable it to meet its sulfur reduction commitments by retiring several coal-fired plants rather than install scrubbers on any existing ones (M. Keating 1983b; Anon. 1983; Macdonald 1997).

Following the regulatory actions of 1980 on Inco and 1981 on Ontario Hydro, little else new happened to govern air pollution in Ontario for two years. The federal-provincial task force set up to investigate Inco's capacity to lessen emissions reported in December 1982 that the majority of Inco's emissions could be reduced at a cost of around \$500 million (see Macdonald 2007, 100). This served as a basis for negotiations conducted between Inco and the Ontario MOE during the summer of 1983. Inco privately acknowledged that the technology necessary for a seventy-five percent reduction in sulfur emissions was available, but refused to make the costly investment (see Macdonald 1997, 221). Later that year, in December 1983, as the federal government appeared prepared to finance Inco's modernization, the Canadian Coalition on Acid Rain met with the firm to encourage them to lobby for federal assistance. Inco, however, refused, claiming that it was not yet in a position to make a decision on the matter (M. Keating 1983f; see Macdonald 1997, 101; Macdonald 1997, 239–240).

During 1983 and into early 1984, the federal and provincial environment ministers discussed the need for further reductions on the Canadian end. An October

²⁹ The plan was actually first announced in April 1980, yet received substantially less attention at the time (Editorial 1980b).

1983 meeting in Fredericton, New Brunswick, resulted in the “Fredericton accord,” an understanding that additional reductions would be made, contingent on specific circumstances related to federal assistance and American reciprocity. It was clear at the time that smelters in Manitoba, Québec, and Ontario would need to be regulated (with the bulk of the reductions occurring in Ontario); it appeared likely that the federal government would assist financially with loans or grants; and there was hope that Canada would be able to improve its bargaining position with the United States, as bilateral talks were scheduled to re-open during October 1983 (M. Keating 1983f). However, it became clear that the final of these conditions would not be met in January 1984, when President Reagan stated that the United States would not proceed with pollution controls (M. Keating 1984).

In March 1984, the environment ministers of seven provinces (Ontario, Québec, Manitoba, New Brunswick, Nova Scotia, Prince Edward Island, and Newfoundland) and the federal government agreed to sulfur dioxide reductions of fifty percent from 1980 levels, irrespective of US action. As a portion of these reductions had already been committed to, the additional incremental increase represented a roughly twenty-five percent reduction. While the specifics of which sources would be regulated and to what extent had yet to be determined, the ministers based their agreement on the understanding that the provinces would take the lead in controlling pollution from coal-fired power plants, and that the provinces would assist in addressing smelter pollution by funding pollution-decreasing modifications. In particular, Ontario’s Falconbridge and Inco smelters and Québec’s Noranda were among the six smelters that would be expected to reduce pollution substantially at a high cost (M. Keating 1984; Noble 1984). By the fall

of 1984, Inco had agreed privately to provincial negotiators that it would reduce its emissions to 350,000 tons per year (thus averaging less than 1,000 tons per day) (see Macdonald 2007, 101).

In February 1985, the federal environmental minister announced a federal plan to help the seven Eastern provinces reach their fifty percent reduction goal, from 1980 levels of 4.6 tons of sulfur dioxide per year to 2.3 million tons by 1994 (M. Keating 1985a; Editorial 1985a; Partridge 1985). In it, the provinces signed an accord to reduce their emissions. (Weeks later, it became clear that the federal government would make \$150 million available for smelter improvements.) It was also announced at the time that the federal government would tighten tailpipe standards (which, at the time, were substantially more lenient than American standards). A month later, the federal government announced that auto tailpipe standards would be brought in line with those in the United States, thus lessening Canada's emissions of nitrogen oxides (Editorial 1985b). The exact amount that Inco would be required to reduce sulfur emissions was initially unclear, but Falconbridge would not have a lowered cap and Ontario Hydro would have its lowered from 260,00 tons per year (as specified in the 1981 regulation) to 175,000 tons by 1994 (M. Keating 1985b).

Inco then announced, in April 1985, that it would meet its previously agreed-to reductions and, surprisingly, stated that it would not use federal funding since it was able to make the reductions for less cost than expected and did not want to meet the conditions of the funding. This program was expected to bring Inco to about seventy percent below 1980 levels, albeit less of a reduction than had been discussed with negotiators during the summer of 1983. At the time of its announcement, Michael Keating (1985b) of the

Globe, as well as the CCAR, observed that the plan did not actually account for how fourteen percent of the 2.3 million tons would be reduced. Commenting on the national program, Douglas MacDonald (2007, 101) notes that it fell short of its claimed reductions:

The national program was some 300,000 tonnes short of the 50-per cent reduction goal, a fact that was glossed over by the federal government, eager to show the Americans that Canada was acting and thus had a moral justification in pressing for comparable action in that country. Since Ontario was responsible for roughly half of the eastern emissions, at least half of that shortfall can be attributed to the inability of [Ontario Ministry of Environment] regulators to press the two major sources, Ontario Hydro and Inco, to make greater cuts (see also McLaren 1985b).

However, by the end of the year, the 300,000-ton shortage had been accounted for. Countdown Acid Rain, Ontario's acid rain control plan, was announced in December 1985 (Ontario Ministry of the Environment 1985). It was created with the passage of four regulations under the province's Environmental Protection Act. In it, Ontario Hydro's sulfur caps stayed put at 175,000 tons, yet the eventual cost to implement these reductions reached \$2.7 billion (see Macdonald 2007, 101). Algoma Steel and the Falconbridge smelter—the province's third and fourth largest sulfur emitters, respectively, which had both managed to avoid new regulations to that point—were required to reduce their emissions by roughly two thirds (McLaren 1985c). (Algoma Steel's annual sulfur dioxide emissions allowances reduced from 280,000 tons per year to 125,000 and Falconbridge's from 154,000 tons a year to 100,000.) Inco's mandated reductions were also substantially more than the firm had previously agreed to—265,000

tons of sulfur dioxide per year. Costing roughly \$500 million to the company, Inco's CEO called it "the straw that breaks the camel's back" (McLaren 1985c, 1).

In the end, the policy effort was a substantial success. At the time of its announcement, it arguably represented the most aggressive and costly acid rain abatement effort undertaken in North America. Upon its announcement, Adele Hurley of the CCAR said, "It's just a great day for the environment in this country—it's a great, green Christmas present" (McLaren 1985c, 1). The CCAR's Michael Perley said "All in all, it sounds like a pretty good program. It's a major change from what we had before" (McLaren 1985b, 1). By the end of 1994, sulfur dioxide emissions in Eastern Canada stood at 1.8 million tons per year, 0.5 million tons below the objective of 2.3 million (Macdonald 1997).

2.2. Property-based Interests and Canadian Acid Rain Governance

Many people joined the discussion over how to address Ontario's and Canada's acid rain problem during the late 1970s to the middle of the 1980s. No story is complete without considering the personalities of the company heads, the provincial and federal environmental ministers and their executive staff, cycles of electoral politics and, of course, the scientists who discovered the causes, consequences, and extent of the problem. As stated above, a narrative focusing on the importance of these actors could use any one of a number of theories that place them at the center of the policy process. That said, unlike the other accounts of the Eastern Canada Acid Rain Program, which highlight the importance of scientific knowledge of the problem or the importance of the federal and provincial environmental ministries, this case study seeks to highlight the importance of the property-based interests concerned with addressing the acid rain

problem so that it did not negatively affect the province's tourist and forestry economy or the property values in the Muskoka and Haliburton regions of Ontario. As Munton, Keating, and Fenech (1995, 12–13) report:

The phenomenon of acidic precipitation languished while it was only linked to a familiar problem, smelter emissions causing pollution around Sudbury. It became a political issue and a media cause when it was linked to a new and surprising problem, and one close to “home” for many people, the damage those emissions were causing to popular vacation and fishing lakes hundreds of kilometers away from Sudbury.

This case study shows that, as in Los Angeles and Toronto during the 1950s, and New York State during the 1980s to the present, one of the most influential actors was the region's local growth coalition. As with the Adirondack Council, this political actor was environment-themed to be sure. But this is because this concept of the environment was in existence and in popular usage at the time, and described the actions of the group, not because the coalition was necessarily an environmental NGO.

In addition, as in the Toronto case study above, the region's two metropolitan newspapers were important in bringing the issue to the public's attention and applying pressure to resolve the environmental problem. Recalling how quickly the acid rain issue became politically salient in response to the realization of its effects on local property values, Micheal Keating (1993, 23), the chief acid rain reporter at the *Globe*, said:

The popular reaction was rapid and visceral. When I took on the environmental beat I recall telling a senior Ontario Crown Counsel of my new posting. I explained that acid rain was one of the big stories that I would be covering. As soon as I described acidification of the Muskoka lakes, he instantly reacted, saying this meant the value of his cottage would drop.

First, however, it is necessary to describe the industrial actors with opposing objectives in order to frame the context in which the property interests' lobbying took place.

The industrial actors in the acid rain story of the late 1970s to mid-1980s represent a different sort than those in Toronto during the 1950s. Urban air pollution in Ontario's largest city had already been addressed successfully, with manufacturers and manufacturing support industries regulated under the 1958 air pollution legislation. What was left to be regulated were the coal-fired power plants and smelters located in relatively remote locations. Rather than turning to the CMA for representation, these firms were politically powerful enough by themselves to engage in direct negotiations with provincial regulators.

Ontario Hydro was, at the time, a crown corporation which tended to seek as much autonomy as possible in its business dealings. In Douglas MacDonald's (1997) analysis of its role in Ontario's acid rain program, he asserts that Ontario Hydro sought first and foremost to be a unique entity; second, as a business firm maximizing return on investment and; third, lowest on its priorities, as a public agency that would cooperate with the Ontario government on its policy objectives. Given that, under normal circumstances (that is, not during a politically salient effort at regulation), these plants fell under Ontario's point of impingement regulatory instrument, Ontario Hydro had never experienced intrusive regulation to the extent that the provincial government would specify the types of abatement technology that must be used in its power plants.³⁰ None

³⁰ Ontario's point of impingement regulations specify the allowed concentration of a regulated substance at the point at which it comes in contact with humans (Estrin and Swaigen 1974). Thus, power plants and smelters sought ways to dilute pollution so that the ambient concentrations at the point of impingement did not require abatement techniques beyond building higher stacks.

of its power plants, including its largest polluters—Lakeview, Lambton, and Nanticoke—had been required to install scrubbers to lessen sulfur dioxide emissions, for example. As MacDonald (1997) notes, the fact that, during the negotiations over acid rain-causing emissions during the early 1980s, Ontario Hydro managed to avoid being told which plants to reduce emissions from, or how to meet its overall targeted cap, is indicative of the power of this organization.

The remaining major producers, Inco, Falconbridge, and Algoma Steel, were privately owned metal producers selling their products on the global market. All large employers important for the economies of the towns of Sudbury and Sault Ste. Marie, Ontario, they had considerable influence in the provincial government and had been able to avoid heavy regulation imposing high capital investment costs. During the early 1980s, due to low nickel prices, Inco had lost money on an annual basis, thus providing rhetorical backing for its argument that it could not afford the necessary measures to lower emissions (Macdonald 1997). The fact that the federal government was willing to finance the modernization of these plants is indicative of their considerable bargaining power. Thus, the efforts of Ontario's property-based interests to address the problem of acid rain took place in the context of concentrated, powerful and, at the time, occasionally non-profitable heavy industry trying to maximize its return on investment and with little economic incentive to take measures to improve the regional environment for which the market for its products did not depend.

The issue of acid rain exhibited the similar divide between industry and property that the effort for the abatement of Toronto's air pollution in the 1950s exhibited. The tourism and outdoor recreation industry wanted aggressive abatement efforts on the part

of Canadian industry, but the smelting and energy industries maintained skepticism over the importance of acid rain, which in the words of one representative, was killing fish “in an obscure lake nobody ever sees a thousand miles from here” (Rusk 1982, 14). The division between the two was cast in its sharpest relief in early 1983 when the U.S. Chamber of Commerce and the Canadian Chamber of Commerce formed an acid rain task force to jointly develop strategies and policy proposals aimed at limiting costly regulation. At the time, Canadian property-based economic interests—themselves business interests—expressed frustration at being excluded from involvement on the Canadian end of the task force.³¹ The *Globe* quoted a former president of the Ontario Tourist Outfitters Association saying:

It appears industry is trying to ease their own situation vis-à-vis acid rain and they are certainly not speaking to any part of the tourist industry. It seems as if the American industrial sector has asked industries (in Canada) to try to get together with them to present a common front to the U.S. Administration and U.S. Congress (M. Keating 1983d, 2).

Similarly, the executive director of that organization said: “We are extremely upset at these discussions going on without our groups being part of them, seeing how we are so directly affected” (M. Keating 1983d, 2).

³¹ As discussed in the next chapter, the Canadian government effort to convince the United States to accept sulfur emissions cuts was an area of agreement between Canadian industry and property interests. In fact, the Canadian Chamber of Commerce and the U.S. Chamber of Commerce were openly divided over the issue of who would make what reductions (M. Keating 1983c).

2.2.1. The Canadian Coalition on Acid Rain

The CCAR, created in March 1981, was instrumental in pressuring the Ontario government for acid rain relief through the regulation of Inco and Ontario Hydro (Editorial 1981a). It was a coalition of organizations (counting forty-two member organizations in early 1983, fifty-one in late 1985) interested in addressing acid rain through public campaigning and private negotiations with governments and polluters (M. Keating 1983b; McLaren 1985d). Reflecting on its importance, *Globe* acid rain reporter Michael Keating (1993, 4) says that “The most sustained and effective criticism of government and business came from the Canadian Coalition on Acid Rain, which maintained constant pressure for acid gas reductions by constantly pressing the media to cover various aspects of the story.” A common oversimplification among scholars of Canadian environmental politics is that the CCAR was an environmental lobby group (see Steel and Soden 1989; Hoberg 1991; Boardman 1994). Such analyses have contributed to the view that Canada’s “environmental movement” was especially influential during the 1980s, or that this period represented a new generation in Canadian environmental policymaking (see Paehlke 1997; Paehlke 2009). A more nuanced description is that the CCAR was a coalition aimed at addressing a single issue (acid rain) due to a variety of reasons, reflected in its membership. As property-based groups concerned about acid rain’s detrimental effects on land values were among its most important members, it behaved much like a local growth coalition concerned about air pollution. The CCAR’s complex identity as an issue-specific actor, as opposed to an environmental NGO, is recognizable given two features of the CCAR: (1) the coalition’s membership, and (2) the lack of interest of the group in other “environmental” issues

outside of acid rain.³² Regarding its membership, the CCAR's members were in large part tourism, conservation, and sportsman's associations, sporting goods manufacturers, with environmental groups making up less than one-third of the members (Power 1985; Albin and Paulson 1985). As for its activities, the CCAR was created for the specific purpose of addressing acid rain and, in 1990, when the issue had been substantially (although not entirely) resolved, the CCAR disbanded since its sole purpose was no longer relevant. Despite being highly effective, the CCAR never advocated on behalf of other environmental issues.

Even before the formation of the CCAR, the province's property-based interests expressed their concern and frustration over acid rain laws, albeit in a more diffuse way. When the control order was lifted on Inco in 1978, Ontario cottagers' and anglers' association were among the interests publicly opposed (Malarek 1978). Early the following year, as the costs of the acid rain problem became clearer, the executive director of the 300,000 member Ontario Cottager's Federation publicly stated the following:

We've been told about water pollution; we've been told don't eat fish because of mercury poisoning, and now we're being told our lakes don't have a hope in hell. Our property values, our lifestyle, an entire economy is being eroded. Put a plug on acid rain!

(Howard 1979a, C4).

³² Insofar that the CCAR's success represents the enhanced influence of the Canadian environmental movement during the 1980s, statements about the importance of this movement are arguably accurate. However, the enhanced credibility and political will the coalition owed to the participation of property should not be understated. Viewed historically, the CCAR appears more as a continuation of the influence of local/regional growth coalitions such as the MTCC in promoting economically favorable clean air policy.

Two years later, in 1981, the Ontario's Cottager's Federation's president, Jerry Strickland, made similar public comments: "If the fishing is not there, the tourist will stay away, and that's the end of the economy of Haliburton and Muskoka. Acid rain could spell the end of cottage country if it's not curbed" (Stoffman 1981, A16). In addition, the Muskoka region's largest chamber of commerce, the Huntsville Chamber of Commerce, lobbied Canadian officials to address the issue (Howard 1981). During 1984, the Muskoka Lakes Association (with more than 10,000 cottage owners as members) held fundraisers for the anti-acid rain lobby and, on one occasion in response to solicitations for contributions it distributed, raised \$125,000 (Howard 1981; McNenly 1984). Yet as influential as these property-based groups were, the formation of a coalition (of which they were members) consisting of other property and local growth interests enabled these otherwise diffuse interests, plus other interest groups, to speak with a common voice on this particular issue.

Part of the reason for CCAR's effectiveness rested in its ability to successfully establish close ties with members of the media. *Globe* acid rain reporter Michael Keating (1993, 7) recalls that "Groups such as the Canadian Coalition on Acid Rain, would often trigger a story by suggesting questions that should be asked of a politician or business person. The story would reflect the questioning of that person, and might or might not refer to the Coalition." Referring to a *Globe* article from February 10, 1983 titled "Canada should stop waiting for an acid rain control agreement with the United States and make its own pollution cutbacks now, U.S. Senator Robert Stafford says," Keating (1993, 7) illustrates this relationship:

This is a typical story in which an important news source cannot be ignored. It was also a story arranged by the Canadian Coalition on Acid Rain, which had invited Stafford to Toronto to speak and especially to meet the news media and get coverage.

Moreover, Keating (1993, 9) added that “journalists would often call the Canadian Coalition on Acid Rain for reaction to statements by government or industry officials. If the reporter did not call the Coalition, its representatives would often call the media directly.” He further commented that the relationship benefitted from the complementary competencies of the CCAR and the media, namely that the CCAR was in possession of the scientific understanding of the issue and the media was necessary for the CCAR’s objective of arousing public opinion:

Michael Perley and Adele Hurley of the Coalition would phone or mail information to The Globe on a regular basis, and were always available to provide comments on actions or inaction by governments or industry. They were renowned for what was generally considered to be the best set of files on acid rain available. The relationship was symbiotic. The Coalition needed the media to put pressure on governments to act on acid rain. The media found the Coalition to be a valuable and reliable source of information on a complex subject (M. Keating 1993, 12).

This relationship also existed with the writers of the *Star*, in particular Ross Howard, with whom Perley wrote a book on acid rain in 1980. To give one example, after the initial round of Ontario regulations on Inco (in 1980) and Ontario Hydro (in 1981) occurred, and the federal government brought US media representatives and politicians to the acid-damaged areas for a tour, it became apparent that Ontario’s stalled efforts were damaging diplomatic relations with the Americans. Ross Howard responded by writing articles underscoring Ontario’s inadequate abatement efforts featuring extensive quoting from

Perley and Hurley (Howard 1981; Howard 1982). One such article, which spotlighted a January 1982 amendment to the 1981 Ontario Hydro regulation allowing the utility to produce more nitrogen oxide as sulfur dioxide was reduced, contained the following quote from Hurley:

The cabinet's fiddling with the limits on Hydro emissions won't fool anyone in the U.S. Legislators there want a blunt answer on whether Ontario has strict controls on its major polluters. The answer here is no (Howard 1982, A18).

Furthermore, when Ontario Hydro announced its plan to sell electricity to New Jersey, the CCAR was vocal in its opposition. Referring to the National Energy Board hearings over Ontario Hydro's application to lay the energy lines, Hurley stated the following:

The hypocrisy of increasing acid rain emissions in Ontario, some of which fall in New England, while demanding of American citizens that they pay higher utility bills to cut power plant emissions in the Midwest is nowhere in the transcripts (Rickwood 1982, A3).

As mentioned above, Ontario Hydro's plan was cancelled in the wake of the backlash. Other articles prominently featuring the CCAR's positions were its letters to the editor and their commentary on candidates for the Ontario premiership in terms of their acid rain platform (Perley and Hurley 1981; Haliechuk 1985).

In addition to using the print media, the CCAR attempted to mobilize the public with publicity campaigns aimed at raising the political salience of the issue. In early 1982, it used radio advertisements featuring popular entertainers and billboards with the words "Who Will Stop the Rain?" which were placed in both Canada and the United States (Anon. 1982; Grange 1982). These efforts helped to place the issue in the broader public consciousness and, in the following provincial election, acid rain was for the first time a prominent election issue.

The CCAR also commissioned polls in order to underscore the extent of Canadian popular support for acid rain controls. In 1982, a Gallup poll commissioned by the CCAR indicated that three out of four Canadian thought that the federal and provincial governments had done little or nothing to address acid rain (Harrington 1982). A March 1984 CCAR-commissioned Gallup poll found that sixty-five percent of Ontario residents supported government funding to limit emission from Inco's Sudbury smelter (Anon. 1984b). It also found that nearly half of Canadians indicated that the government should pay for more than half of the expense, and that most Canadians would be willing to pay \$5 to \$15 per month to address the problem (McNenly 1984). These findings were reported on the editorial page of the *Globe*, which used to opportunity to underscore public support for costly abatement measures:

This sampling of opinion is no mere academic exercise. As Michael Perley, of the Canadian Coalition on Acid Rain, which sponsored the survey said, "The poll is a demonstration to politicians of the willingness of Canadians to contribute. We are trying to allay concerns that (politicians) might have about imposing an extensive cleanup." . . . Ultimately, the cost of keeping harmful industrial emissions down should be buried in the cost of the products we manufacture, though it is evident that tax dollars will have to be applied in the initial stages of the battle (Editorial 1984c, 6).

Evidence suggests that these opinion polls were effective in convincing politicians that Canadians would be willing to shoulder the costs of a cleanup. When the ECARP was announced in February 1985, the federal Environment Minister Suzanne Blais-Grenier mentioned the findings of the polls as a rationale for the policy (M. Keating 1985b).

In addition to publicly pressuring the Ontario government and polluters, the CCAR also negotiated directly with polluters. In December 1983, the CCAR met with

Inco officials and tried to convince them to work with the CCAR to lobby for financial assistance for the federal government (see Macdonald 1997, 239–240). While Inco did not cooperate, the CCAR continued to develop policy alternatives. At the same time as releasing the results of its March 1984 Gallup survey, in April 1984, the CCAR published proposed regulations indicating that it would cost Inco \$500 million to reduce emissions from 1,950 tons a day to 274 tons a day.

As Ontario appeared to be on the road to committing to substantial sulfur dioxide reductions, the CCAR turned its attention to a regulatory issue on which Canada lagged, namely, automobile standards. Such standards were determined by Transport Canada, which had been considering raising them since 1981 yet had not acted. Perley of the CCAR responded by criticizing Transport Canada for refusing to publish studies on the costs, and testified at a federal Parliamentary subcommittee hearing on acid rain that aligning automobile standards would not only shield Canada from criticism by the United States, but it would also be an inexpensive regulatory act (Rickwood 1984). The legislative director of another member of the CCAR, the Canadian United Auto Workers union testified at the same hearing in favor of tighter automobile standards. Shortly after these hearings, after which one MP told the *Star* that the federal transport minister “ought to be skinned” for his refusal to create more stringent controls, Transport Canada announced that it would indeed match the United States’ standards (English 1984, A18).

The CCAR continued pressuring the provincial governments over the implementation of the ECARP for the remainder of the decade, in one instance criticizing Ontario Hydro over a plan to credit itself with sulfur allowances when its annual emissions fell below its cap on a given year (Israelson 1987a; Israelson 1987b). It

concluded its work after the United States passed the 1990 CAAA with a sulfur dioxide emissions trading program and tightened automobile emissions standards.

2.2.2. The Print Media

As with Toronto's urban air pollution in the 1950s, the *Globe* and the *Star* were active voices in support of pollution abatement. Keating (1993, 3) further reports, "The slant of the stories was that acid rain was a threat, and that governments and industry had an obligation to reduce that threat to tolerable levels. Fairly early on in the coverage the target of a fifty percent reduction in emissions was recommended by federal environment officials, and this became the goal which the media used to judge political actions." Keating has reported counting over 3,500 articles and letters on acid rain printed in the *Globe* alone from late 1977 to the middle of 1993.

Both the *Star* and the *Globe* ran numerous front-page articles and lengthy features on the topic of acid rain, the latter taking the characteristic of "human interest" stories about the experiences of people coping with the loss of aquatic wildlife and speculating about what it means for the future of the Muskoka region. One full-page article written by Keating and published on July 27, 1981 was titled "Rain of Death" and accompanied with banners reading "Lake once a haven, 'now everything is going'": "Cottagers fear a legacy of death"; and "Produced by air pollution, acid rain destroys life" (M. Keating 1981b). This article, like others produced over a nearly ten-year period by both major Toronto newspapers, mixes personal accounts with scientific information about the causes and consequences of acid rain, along with up-to-date descriptions of the political constraints on policy action. Months earlier, the *Star* had similarly printed a lengthy two-article feature called "Acid Rain: Will our lakes survive?" authored by the paper's acid

rain writer, Ross Howard, and eventual CCAR co-founder Michael Perley (Howard and Perley 1980b; Howard and Perley 1980a). These articles contained a familiar mixture of vivid and emotional storytelling, accented with information about the science and politics of the problem. Published in the *Star's* "Insight" series, they were titled "Unnatural peace descends with acid rain" and "Polluters drag feet in rescue of lakes." The first featured a large, stirring photo with the following caption:

Vanishing: A couple of boys fish for chub in a Mississauga-area creek. Such scenes are becoming scarcer as fish succumb to acid rain and become scarce, although chub and other "garbage fish" are more resistant to acid than the prized trout and walleye (Howard and Perley 1980a, A10).

During late 1981 and through 1982, Ontario Hydro's plan to increase its sale of electricity to the United States received a substantial amount of attention in the *Globe* and the *Star* on the basis that it would increase pollution in Canada and damage the country's bargaining position with US negotiators (Rickwood 1982; Perley and Hurley 1981). One article, titled "Hydro's energy plan would kill 560 lakes, critics charge," contained strongly-worded criticisms by not only CCAR representatives, but also of federal Environmental Minister John Roberts, who called the plan "reprehensible and regrettable" (Rickwood 1982, A3).

In 1983, when the Ontario government appeared unwilling to take additional measures to regulate its largest polluters and after the Canada-US acid rain treaty talks reached an impasse, the print media continued to give the issue exposure by reporting the findings of studies and detailing the experiences of other countries grappling with air pollution. In a *Globe* article from August 2, 1983, titled "Acid rain and dying forests:

Europe faces a new air war,” the author described the problem in Germany, implying that Canada could potentially face the same circumstances:

Now Germany is faced with the prospect of losing entire tree species from its valuable forests. So far most of the acid-induced damage has been in fir and spruce, but pine and beech trees have also been affected. And the contagion is spreading rapidly: in the Black Forest surveys last summer showed 4 per cent of the trees were ill and 96 per cent were healthy; this year the numbers were exactly reversed (Folster 1983, 7).

About Canada, the author wrote: “So far there isn’t any hard evidence that damage of the European magnitude is occurring in North America. But, Federal Environment Minister John Roberts says, ‘We’re very worried about it.’”

The *Globe* also allowed its pages to be a forum for experts to communicate with the public over the issue. Its op-ed page pieces by scientists and politicians about the problems of acid rain were common, as were letters to the editor:

Letters to the editor played a very important role in the acid rain coverage. They were a forum for politicians, business people, academics, scientists, environmentalists and citizens to contribute directly to the debate. Some people were repeat commentators in The *Globe*, including Paul Aird, professor of forestry at University of Toronto, Charles Caccia, a former federal environment minister, officials of Ontario Hydro and leaders of the Canadian Coalition on Acid Rain (M. Keating 1993, 6).

As in the case of urban air pollution in Toronto during the 1950s, the papers also published articles on the health effects of airborne contaminants. In a September 20, 1985 front-page article, the *Globe* presented the findings of a study indicating that Ontario children living in areas experiencing a high quantity of acids had decreased lung capacity and higher instances of a range of pulmonary morbidities (McLaren 1985a).

While noticeably more moderate in tone than during the 1950s, the editorial pages of both the *Star* and *Globe* were vocal advocates for acid rain abatement policy.

Recalling how the *Globe* came to adopt a firm editorial stance on acid rain, Michael Keating (1993, 6) says:

In the late 1970s the editor, Dick Doyle, decided that acid rain was a serious threat, and the paper should support strong controls. Editorials, backed by editorial cartoons, were often sharply critical of Canadian and U.S. governments for not moving faster to implement such controls. This editorial policy supported the strong calls for acid rain controls coming from environmentalists and from the Canadian government.

Nevertheless, the content of the editorial pages of two papers varied somewhat. At this point in its history, the *Globe* positioned itself more as Canada's national newspaper of record than as a Toronto metropolitan newspaper (despite the fact that its main office was located in Toronto). This change in its positioning is reflected by the fact that its editorials focused more on pressuring the federal government and the United States to arrive at a bilateral arrangement than on the specific measures taken in Ontario. The *Star*, in contrast, used its editorial page to apply pressure to the Ontario government over its provincial program.

When the MOE rescinded the control order on Inco, the *Star's* editorial board (1978a, A8) voiced its opposition forcefully on the basis that the smelter contributed to the acid rain problem outside of Sudbury:

Well, good for Sudbury. But the fact remains that Inco smelters will go on blowing up to 3,600 tons of sulphur dioxide into the atmosphere every day. And if this poisonous waste isn't coming down on Sudbury, it's coming down on other places farther away. . . . It may be, as McIntyre [a MOE staff member] said, that nitrogen compounds carried

thousands of miles by the wind are an unknown factor in causing acid rain. Still, sulphur dioxide is certainly a known factor and it doesn't need several years of research by a team of scientists to figure out that adding 3,600 tons a day of it to the atmosphere must be having some effect.

Later, as the potential consequences for Ontario's economy became clearer, the *Star's* editorial board (1979d, A8) sought to clarify what was at stake by linking the problem in Muskoka to Toronto:

What has the destruction of distant lakes to do with us in urban Toronto? The answer is, a great deal. First, we live in a highly integrated society, and the loss of any of our natural resources, and the jobs and income they generate, will eventually be felt by all of us. You don't have to own a cottage in Muskoka to share the loss of Ontario's total wealth brought about by the crippling of our recreation and tourist industries. Second, if nothing is done to halt the onslaught of acid rain, its destruction will spread. It can eventually stunt growth of forests, damage our food crops and corrode our homes, cars and a host of other goods we hold dear. In the end, everyone in the province will pay. It's in the self-interest of everyone – whether city dweller or farmer – to develop an understanding of what acid rain is and to encourage those seeking to eliminate it.

Days after a federal committee—the House of Commons Standing Committee on Fisheries and Forestry—released a report in October 1981, titled *Still Waters*, with policy recommendations about how to address acid rain, the *Globe* wrote to endorse them and concluded with the following stance: “We cannot hope for any real influence on U.S. officials until we put our own house in order, install ‘scrubbers’ to remove sulphur from plant emissions, and set up tough and effective regulations for pollution control” (Editorial 1981b, 6; see Sub-committee on Acid Rain of the Standing Committee on Fisheries and Forestry 1981).

In response to concerns that the plan by Ontario Hydro to sell electricity to the US would increase pollution in Canada and undermine its negotiating position with the United States, the *Star* said:

These are certainly valid concerns. The acid rain problem in North America has reached such crisis proportions that the introduction of even another 50,000 tons of acid rain into the air could have serious consequences for an already sensitive environment (Editorial 1982a, A8).

In one editorial, which underscores the competing economic interests of Ontario's industry and property, the *Star* commented on Inco's claim that cutting sulfur dioxide emissions would be too expensive. It not only pushed for acid precursor reductions, but also suggested the compromise of using government assistance to pay for it:

The company says it can't put out the hundreds of million it would cost for a cleanup because it has been losing money since 1981. It says it "must regain profitability and restore its financial strength before considering (this) financial investment. But while Inco worries about its profit picture, as many as 48,000 of our lakes face doom. Cleaning up Inco's mess is absolutely imperative. True, its emissions are less than half of what they were 15 years ago. But the fumes are still a problem. Half of Canada's acid rain troubles come from homegrown sources, and majority from smelters like Inco's. It may be that, right now, Inco genuinely needs help paying for its cleanup. If so, it should get it, from both Ottawa and the province (Editorial 1984a, F2).

After the Canadian provinces decided to move forward with unilateral reductions, the *Star* praised the move and made recommendations on how to proceed, including the use of control orders and loans:

But our decision to cut acid emissions by 50 per cent over the next decade will only be meaningful if it's backed up by specific action. We need to put realistic control orders on

major polluters such as Ontario Hydro and the large nickel and copper smelters in northern Ontario, Manitoba and Quebec. These controls should take us to the 50 per cent, with no extensions or excuses allowed. But industries that need financial help should be able to get it from government, as loans, on the clear condition that the industries eventually pay the money back (Editorial 1984b, B2).

Six months following the announcement of the ECARP, the editorial page of the *Star* kept pressure on Ottawa and the provinces to deliver on their commitments:

Today, the picture is cloudy. And the forecast doesn't look good. In the six months since Mulroney described acid rain as "this vital issue . . . high on the national agenda," virtually nothing has happened to advance the cleanup. The promised money is still sitting in Ottawa. The provinces, except for Quebec, have done little to get their clean-ups going. . . the acid rain coalition gave them, except Quebec, all bad marks for what they've accomplished in the past six months. . . Ontario, whose contribution to acid pollution is about half the national total, needs to take stock of its current regulations. Are the cutbacks planned by our biggest polluters, Inco Ltd. and Ontario Hydro, enough to ensure that we'll meet our 1994 target? Does the government need to impose a stricter timetable? When are we going to see some progress? (Editorial 1985d, B2).

Thus, as with the case of pollution in Toronto during the 1950s, the region's property-based economic interests were crucial in pressuring government to address the problem and developing policy alternatives. Consistent with other instances of property-based economic interests pushing for clean air policy, the prescriptions adopted represented a compromise between political actors whose fortunes were tied to the polluted locale and those whose were not, and took the form of eco-modernization rather than changes in consumption or infrastructure. The policy outcome can be seen as a compromise between property and industry because the pollution reductions were not

imposed in a particularly invasive way: specific technology was not mandated and production was not curtailed. After all, the property-based economic interests would not have benefitted from these firms leaving the provincial market and laying off thousands of workers. Related to this is the fact that the property interests favored a technological solution to the problem (that is, eco-modernization). Both the CCAR and the newspapers advocated for financial assistance for smelter modernization. Adele Hurley of the CCAR said in 1984 that Canada's acid rain problem was largely a "smelter modernization problem" (quoted in Welner 1984, A19). Furthermore, as potential Ontario Hydro cuts were discussed in the late 1970s and early 1980s, the possible means of bringing about these pollution reductions discussed in the newspapers were through the use of technology. The *Star* suggested early on that the solution rested with moving toward nuclear power, while the *Globe* expressed a preference for scrubbers. In both instances, the concern was over which technology would bring about a resolution at the lowest cost to ratepayers.

3. Conclusion

This chapter has sought to provide an account of Canada's (in particular, Ontario's) experience with addressing air pollution, thus contributing to our understanding of how North American jurisdictions confronted this problem during the 1950s through the 1980s, and also providing historical context to existing accounts of air pollution politics in Ontario. It has argued that, although a range of factors had to come together to bring about air pollution relief, Toronto's and Ontario's property-based interests were a decisive factor in supporting the efforts of their elected officials to address the matter. This observation is consistent with Molotch's theory of property-

based interests and local economic elites as well as the experiences of other cities and states in addressing air pollution during the same time period.

However, the political influence of property-based interests should not be overstated. The Ontario legislature did not walk lock step with the MTCC or the Toronto newspapers, as it ended up creating a policy response closer to what a major national industrial interest, the CMA, lobbied for. While not ideal from the standpoint of limiting emissions, it was nonetheless a substantial gain from what had existed before. This suggests that the CMA's proposals and the resulting legislation were a compromise between property-based interests and the manufacturing industry; an abatement effort pushed by the landed interests whose actions were necessary for it to occur, but undertaken on the terms proposed by industry. This became clearer in the following years since the means by which industry adapted to the need to limit emissions was through eco-modernization, namely, continuing the trend of replacing coal-powered freighters and locomotives with ones fuelled by cleaner-burning diesel engines.

Similarly, the province's Countdown Acid Rain program consisted of multiple compromises, such as between the property interests in favor of stringent air pollution controls and the industrial interests against them. Namely, for Ontario Hydro, the province did not mandate the means by which the energy producer achieved its reductions or even the location within the province. This allowed Ontario Hydro the flexibility to find the most cost-effective means of sulfur dioxide reduction, even if it meant that the regions nearby the power plants without scrubbers would not experience substantially improved air quality. Inco and Falconbridge did not have the range of options Ontario Hydro did since Ontario Hydro could shut down specific point sources,

while the smelters were themselves single point sources. Here, however, thanks in part to support from the province's landed interests, the federal government offered funding for the installation of abatement technology. As with Ontario in the 1950s, these policy choices represent eco-modernization rather than changes in energy or product consumption.

Given that Toronto's air pollution politics from this time period had thus far been little known in academic circles, this chapter shall conclude by briefly suggesting two findings from this research which might encourage scholars to rethink some of the concepts we commonly work with when providing accounts of environmental governance. First, "voluntary instruments" for environmental policy frequently discussed as a post-1990 development in American and Canadian environmental governance (Thomas 2003; Macdonald 2007; Winfield 2009) were initially the policy instruments of choice in 1950s Toronto. Because of an absence of jurisdictional authority during the first half of the decade, members of Toronto's APCB tried to get industries to lower their emissions by educating them about how to operate more efficiently. This not only lessened pollution, but also lowered the companies' expenses (Braithwaite 1955a). If seeking volunteerism is nothing new, the research question should shift from how the idea came to be feature of post-1990s environmental governance to, instead, what are the general conditions that lead volunteerism to be embraced? A cross-unit analysis of multiple case studies, taken from different time periods, may yield some interesting results.

Second, the view of science as a driver of environmental policy should be revisited. If science must be true or at least rigorous to be science, then the information

about the health effects of air pollution communicated by proponents of clear air policy can better be described as conjecture and half-truths. To give one of many examples, in January 1956, one of the influential property-based interests, the Melody Rd. Ratepayers Association said that pollution from a nearby brickyard caused eighty percent of the children in the area to have colds (Anon. 1956b). Modern virus theory had not yet reached the point where it was widely understood that viruses, not air pollution, cause colds, and this lack of scientific knowledge arguably benefited the interests seeking air pollution abatement. This is because little accountability exists within politics for making abstract empirical claims which turn out to be false. Even among the scientists who testified to the Select Committee, their claims were based mostly on conjecture and evidence about the health costs of the tenuously-related activity of cigarette smoking. Yet to the public reading newspaper articles—people generally not familiar with the operation of the scientific method or accustomed to the norms of academic rigor—there is arguably little difference between a scientist making a claim with little or no scientific support and with a lot. It all sounds the same once it has been filtered through the popular media. This suggests that the pre-existing interests of those who wish to build support for their policy preferences and who will use whatever evidence they can marshal to strengthen their case rhetorically are, at times, more important for environmental governance than a rigorous scientific foundation.

That said, the story of acid rain in Canada is a popular one for explaining the importance of science in propelling policy forward. While there can be little doubt that scientific knowledge of the problem was a necessary condition, it is unlikely that much more importance can credibly be attributed to it. To give one example, after the 1979

BRCG interim report indicated that most of Ontario's acid rain problem was produced within the province, Ontario environmental minister Parrott insisted that no further abatement measures would be taken until the United States reached a firm agreement for bilateral reductions (Editorial 1979c). With or without science, and despite what the latest report at the time said, the range of justifiable policy responses can be broad. Here, the costs associated with a cleanup, and the fact that the United States had not taken any additional measures to lessen the transboundary pollution, were sufficient to argue that Ontario should not impose strict regulations on sources. Similarly, when around the same time a series of studies were released based on a Northeastern US test site concluding that acid deposition stunts forest growth, the Canadian government's response was to criticize the science. A Canadian Forestry Service analyst declared that the studies "are only laboratory experiments, done under artificial conditions, and not the real thing," while a member of the MOE commented that "We've never had any acid rain in Ontario as strong as the levels the US has artificially created for experiments" (quoted in Howard 1979d, A10).

The decisive factor, then, was not the science itself, but the way it was used rhetorically by the property-based interests who had already decided their stance on the issue. In an editorial in response to Parrott's intransigence after the BRCG interim report, the *Globe* editorial board (1979c, 6) had the following to say:

If Dr. Parrott's Government is so concerned with the preservation of jobs, it should take serious stock of the jobs connected with farming, with forestry, with fishing; short fishing in central Canadian lakes alone accounts, with its tourist spin-offs, for \$600-million annually. A report from the Great Lakes Advisory Board has estimated sulphur dioxide is responsible for \$1.7-billion in health costs and \$2-billion in architectural damage

annually in the United States; have the provincial and federal governments considered what those costs might be in Canada?

And in response to the claims by federal and Ontario officials that the US-based studies on forest damage were of questionable reliability, the *Star's* acid rain reporter, Ross Howard (1979d), defended the studies. He pointed out that the acid rain in Ontario had actually been very close in acidity to what was used in the experiments, and that the evidence of agricultural susceptibility to acid rain had been accumulating for many years.

Thus, the main difference in the role of scientific knowledge between the 1950s and the 1980s is its function in aligning the property-based interests in the first place. In the 1950s, nobody needed science to tell them that Toronto was unbearably smoggy. Soot-covered cars, filthy buildings, and destroyed stockings told the tale. And the culprits were easy to identify—a cursory scan of the skyline revealed much in this regard. Acid rain, conversely, did its damage insidiously. Not a new phenomenon, the possibility of “invisible injury” had been explored during the Trail Smelter Dispute, yet a case for its existence could not be established in a politically meaningful way. The difference in the 1980s is that the experience of the problem (a loss of aquatic ecosystems) needed a credible abstract explanation linking unseen causes to the damage. Otherwise, nobody would have understood that power plants in the Midwest United States—pollution sources of which few Canadians are aware—were causing the problem. Coupled with the understanding that acid rain meant dropping property values, this cause-effect linkage was catalytic in propelling acid rain forward as a political priority for the region’s property-based interests. Beyond that, much of the acid rain coverage reported in the

1980s, as in the 1950s, consisted largely of rhetorically powerful and politically effective conjecture and half-truths.³³

³³ Numerous *Globe* articles over a thirteen-year period report vastly differing estimates of the number of lakes killed (140 to 15,000) and endangered (12,000 to 150,000) (Malarek 1979; Howard 1979b; M. Keating 1983e; McInnes 1990; Howard 1991).

Chapter 5: Air Pollution Governance Along the Canada-United States Border

The chapter discusses the Canada-United States bilateral air pollution regime. Over time, this regime has had two instantiations, and each are discussed here as case studies. It begins with the Trail Smelter Dispute of the late 1920s and 1930s, in which transboundary air pollution pitted farmers from a small town in northern Washington against a smelter company in southern British Columbia. The result of the dispute was an operating regime for smelter which lessened the emissions reaching the downwind farmers. Yet as one observer notes, this “was an ad hoc arrangement outside IJC jurisdiction, and provided no more than a possible precedent for future conflict resolution” (Caldwell 1992, 25). The chapter then discusses the regime’s second instantiation, the policy dispute over acid rain, beginning in 1977, resulting in the creation of the bilateral Canada-United States AQA in 1991. Furthermore, this chapter assesses the subsequent development and implementation of the AQA through a discussion of the 2000 Ozone Annex to the AQA, and a case study of a 1998 international dispute in the Detroit-Windsor area over the reopening of a mothballed coal-fired power plant in Michigan. Each of the two main case studies begins with a discussion of existing literature on the topic, follows this with a time line of events, and then explores the role of property-based interests in pressuring polluters and their governments for air pollution relief. Since the case studies represent international regimes, for which a well-developed literature on regime effectiveness exists, this chapter also assesses the effectiveness of each of them. Following the case studies it concludes with a brief summary.

1. The Trail Smelter Dispute, 1925-1941

The Trail Smelter Dispute is heavily cited in international law jurisprudence for

establishing that “no State has the right to use or permit the use of its territory in such a matter as to cause injury by fumes in or to the territory of another or the properties or persons therein, when the case is of serious consequence and the injury is established by clear and convincing evidence” (Trail Smelter Arbitral Tribunal 1941, 716). Numerous scholars have written about the case’s importance for enshrining the polluter pays principle within the annals of international law (see McCaffrey 2006; Drumbl 2006; Rubin 2006 for a discussion of this literature). In addition, a few historical accounts of the dispute exist. One of these, written before the transborder flow of acid rain precursors received attention, used the Trail Smelter case study to illustrate the constraints on contemporary cooperation on air pollution abatement (Dinwoodie 1971). Two recent historical studies provide in-depth accounts of the politics of the dispute, casting into relief the relative power of the competing interests, the complications related to resolving it through underdeveloped international legal mechanisms, and the influence of the then-present state of the science of sulfur dioxide pollution (Allum 1995; Wirth 1999). These studies provide a sufficiently thorough account of the Trail Smelter Dispute as a historical event, yet do not examine it in relation to other cases of air pollution governance (with the exception of cases of non-international sulfur fumes damage to the property of farmers during the same period in Canada and the United States). In what follows below, this case study provides a summary of the Trail Smelter Dispute, and then highlights the importance of the property owners downwind of the smelter in pushing for the resolution that placed the smelter under a regime limiting the transport of its emissions. After this, and consistent with other accounts of air pollution governance in this thesis, this case study shows that the

resolution was achieved through eco-modernization, that is, the use of technological controls rather than the changes in industrial production. As such, the negotiated settlement represents a compromise between the property-based and industrial interests.

1.1. The Negotiations and Hearings

The origins of the Trail Smelter Dispute are typical for the period before WWII, namely, a point source produces pollution (generally sulfur) that farmers object to, the source offers settlements to the farmers and installs abatement equipment, and the farmers pursue the matter further through legal channels. This pattern of behavior was so common in Ontario, and the smelters so powerful, that Ontario passed the Damage from Fumes Arbitration Act of 1921 banning legal redress for farmers and instead sending the cases to an arbitrator who was tightly constrained in the financial settlements that could be awarded (see Nedelsky 1981). What makes this case study unique is that the smelter causing the damage was in Canada while the farmers, both benefiting from the economic development brought by the smelter and hurting from the damage done to their crops, were in the United States. Thus, a regional air pollution matter became an international incident, pitting landed and industrial business interests against each other for control of the position of the United States government, and between the United States and Canada.

The lead and zinc smelter in Trail, British Columbia was owned by Consolidated Mining and Smelting Company (Consolidated), itself owned by the Canadian Pacific Railroad. It was the largest smelter of its type in the British Empire at the time, and its parent company had substantial influence with the Canadian federal government (Wirth 1999; Trail Smelter Arbitral Tribunal 1941; Dean and Swain 1944). Shortly after WWI, its stacks were raised to 400 feet, substantially increasing the amount of pollution

traveling down the Columbia River Valley and over the national border into Washington state fourteen miles away (Dean and Swain 1944).

The farmers responded by forming the Citizens' Protective Association in 1925 as a way of collectively demanding financial compensation and reduced pollution (Trail Smelter Arbitral Tribunal 2006). The relative strength of their bargaining position was based on (1) the responsiveness of regional federal elected representatives, and (2) the fact that the options for settling the matter available to Consolidated on the Canadian side were not available when dealing with the Americans. Had the aggrieved farmers been in Canada, the company could have done what it did in Trail, which was to enter into “smoke easements” with the landowners or purchase the property outright. However, due to Washington state's restrictions on the owning of foreign land, these avenues were not possible. The result is that, by 1926, the farmers were petitioning their state and federal representatives for assistance and, by the fall of 1927, Washington State officials were requesting action from Congress and the US Department of Agriculture (Allum 2006; Read 2006; Trail Smelter Arbitral Tribunal 1941; Trail Smelter Arbitral Tribunal 2006).

Since the pollution crossed national boundaries, British Columbia, Washington State, and municipal governments did not want to get involved. Precedents existed in the United States for pollution crossing state boundaries, but not for an international issue such as this. Instead, the farmers' congressmen and senators requested the help of the US Department of State, which in turn further enlisted the assistance of the US Department of Agriculture in 1928 for scientific investigations. On the other side, Canadian External Affairs had wanted British Columbia to handle it, but the internationalization of the issue by the United States (in petitioning the International Joint Commission [IJC]) convinced

the Canadian federal government that it needed to get involved to equal the sides (Walker 1928; Wirth 1999; Allum 2006; Trail Smelter Arbitral Tribunal 2006; Trail Smelter Arbitral Tribunal 1941). Consolidated had not only the support of the Canadian National Research Council in Ottawa, but also of the American Smelting industry as a whole, for scientific research to back up its position (R. A. Miller 2006).

A resolution to the dispute was first sought using the IJC to reach a settlement. The IJC had been set up under the Boundary Waters Treaty of 1909 as a bilateral entity to mediate boundary water issues between the countries. In this instance, it was asked by the US government to investigate the Trail Smelter pollution matter and recommend a settlement that both countries could agree to. After extensive scientific investigations and hearings, the IJC awarded \$350,000 to the farmers in 1931 (International Joint Commission 1931). This amount was more than the \$250,000 Consolidated had offered and the industry as a whole wanted, but substantially less than the \$700,000 the farmers had argued for. Furthermore, the plant was not put under an operating regime that would limit the fumes sent over the border. This was a key demand of the farmers and US negotiators, and its absence represented not only a major victory for Consolidated, but also for the industry as a whole, which was seeking to avoid the imposition of a fumes regime that would potentially serve as a precedent for many other instances of air pollution (Allum 2006; Read 2006; Trail Smelter Arbitral Tribunal 1941; Trail Smelter Arbitral Tribunal 2006).

The US State Department rejected the IJC settlement and a three-person Arbitral Tribunal was set up in 1935 to resolve the dispute. Following still more scientific studies, negotiating sessions, and substantial personnel turnover, the tribunal ruled in 1938 to

award the farmers an additional \$78,000 and put the smelter under a strict operating regime (Dean and Swain 1944; Trail Smelter Arbitral Tribunal 2006; Trail Smelter Arbitral Tribunal 1941). The award amount was again less than the farmers had sought, as two of their main proponents died shortly before the hearings, adversely affecting the organization of their case and bringing out interests in the US government more favorable to industry (thus damaging the rigor of the US's scientific case). The Americans' scientific case, based on a controversial "invisible damage" thesis, was rejected, and neither the costs of scientific research conducted since 1931, nor the declined real estate values in the farmers' town of Northport, were taken into account (Trail Smelter Arbitral Tribunal 2006; Trail Smelter Arbitral Tribunal 1941; Allum 2006; Read 2006).

However, the ruling was nevertheless a substantial victory for the farmers, the US State Department, and the cause of air pollution governance in North America more generally. For the first time, in North America, a point source of pollution was required by law to take specific measures to abate the release of airborne substances. This took the form of a dispersion technique that came to be known in the smelter industry as a Supplemental Control System (SCS). The region frequently experienced the overnight formation of an inversion layer which was held in place by the mountains forming the valley. When the sun came out and heated the valley, the pollution would travel to the valley floor and, depending on the direction of the wind, travel north or southward to the farmers. The way the SCS worked is that production would be reduced during the growing season when meteorological forecasts and continuous ambient sulfur dioxide monitoring indicated that early morning fumigations would cause these sudden downdrafts on crops (Dean and Swain 1944; Wirth 1999; Swain and Dean 1941).

This strict regime was adopted on a trial basis for three years starting in 1938 (Dean and Swain 1944; Trail Smelter Arbitral Tribunal 2006; Read 2006). However, in 1941, when it was time to reconsider it, WWII was a larger political issue. The regime was no hindrance on the smelter's ability to provide the allied military with the needed materials it could produce, so it was made permanent and the tribunal was disbanded (Wirth 1999; Trail Smelter Arbitral Tribunal 1941).

1.2. Property-based Interests and Key Players

The Trail Smelter Dispute has gone down in history as an example of an early environmental confrontation between Canada and the United States (see Dinwoodie 1971), but this understanding disguises the fact that it emerged as an instance of forum shopping by landowners seeking to protect the value of their land while benefiting from economic growth that the sources of the pollution encouraged. The town of Northport, Washington, where the farmers were based, was economically depressed by the time the dispute began due to the agricultural depression of the 1920s and the closing of the Northport smelter in 1921 (Trail Smelter Arbitral Tribunal 2006; Trail Smelter Arbitral Tribunal 1941). From 1920 to 1930, the city's population dropped from roughly 1,800 to 400 (Howes and Miller 1929). Local boosters did not have an ideologically anti-smelter stance; on the contrary, it was always hoped (and often rumored) that another would come to the town and restore its economic prosperity. Stewart Griffin, the USDA scientist who gathered evidence of smelter damage for the farmers, wrote in 1928 that Northport was frequently considered as a location for a new facility due to its natural resources and that, at the time, "everyone is still waiting for it" (quoted in Wirth 1999, 11). These hopes and expectations died down a bit with the start of the Great Depression,

but started anew in 1935 when the old Northport smelter was sold. At this point, the rumor was that a gold refining plant or a cement factory would move in, and also that Consolidated itself might open a smelter in Northport. A local business owner and booster named Ed Morris wrote to the US Department of Agriculture (USDA) in March 1940: “Why not put this in Northport, an ideal location for a smelter?” (quoted in Wirth 1999, 11).

At the same time, the smelter smoke was rendering the local farmland largely useless and thus lowering land values. A 1929 report to the IJC indicated that:

the Trail Smelter damage and the hazard it creates are the chief causes within the stricken zone of the depreciation of land values, the loss of borrowing power on farmers, and the inability of sell or rent them. Arrested development is everywhere apparent. Even the most progressive farmers refuse to make further outlays for improvements or to expand cultivated acreage by making additional clearings (quoted in Howes and Miller 1929, 12–13).

Furthermore, a USDA plant pathologist sent to investigate the matter said in 1934 that “These people realize that their condition is not the result of being on sub-marginal land, but is directly the result of the greed of a foreign corporation, which if ended by the cessation of the fumes would restore their property” (quoted in Wirth 1999, 21). What the local business owners and landowners appear to have wanted, then, was industry without the pollution. What they expressly sought through their attorney and the US State Department was a complete cessation of the pollution that was damaging their livelihood and the value of their land.

The key player among the landowners was John Leaden, a farmer with land near the border, who formed the Citizens’ Protective Association (CPA). This organization,

which Russell Miller (2006, 169) refers to as “an early, single-issue, environmental NGO,” presented a united front for over ten years in negotiations with Consolidated and in its pressuring of the farmers’ federal elected representatives. After Consolidated’s largely unsuccessful attempt to settle with the farmers (in the form of cash payments), the CPA had about 115 members (Wirth 1999; Allum 2006). By this point, Leaden and the CPA had secured the support of the state’s two senators, Wesley L. Jones and Clarence Dill, and local Congressman Sam Hill, who in turn applied pressure on the US State Department to resolve the issue through diplomatic means. Other pressure to internationalize the issue reportedly came from the governor in response to the requests of the CPA. Henry Knight of the USDA wrote in a letter that both the governor and officials at the Agricultural Experimental Station of Washington (State) “pleaded with Congress and the Department of Agriculture to have some action taken” (quoted in Wirth 1999, 21).

The support of the farmers’ elected federal officials extended throughout the duration of the Trail Smelter Dispute. In 1935, during the Great Depression, the Senate Appropriations Subcommittee expressed its intention to the State Department that appropriations for funding for the Trail Smelter research would be terminated for Fiscal Year 1936. Washington senators Clarence Dill and Lewis Schwellenback supported the appropriations, however, and were successful in having it restored, albeit for a lesser amount than it had been in previous years (Wirth 1999).

As the diplomatic effort progressed during the phase in which the most significant scientific studies were conducted (1928-1932), it is clear that Leaden and the CPA were actively involved and represented by the US government. The informal interagency

group that gathered the scientific evidence and built the legal case in favor of the landed interests was the Smelter Fumes Committee (SFC). Key members of this group were Jacob Metzger, the US State Department's legal council who led the legal battle, and Stewart Griffin, the USDA's head chemist for the case, both of whom had close ties and frequent communications with the members of the CPA (Wirth 1999). Despite being yet another scientist examining the property of the farmers, Griffin was reportedly trusted by them and explicit about his intent: "we must have chemical evidence to show the extent of the distribution of the fumes on this side of the boundary. Everything else is subordinate to that thought" (quoted in Wirth 1999, 24). In a letter to William W. Skinner, head of the US scientific team, Griffin said that "Several of the farmers sought me out [during the first IJC hearings] in order to express their appreciation. This was more or less of a satisfaction to me, I will admit" (quoted in Wirth 1999, 27).

Metzger, similarly, saw his role as one of advocacy on the part of the landowners (rather than other American interests with a stake in the legal case). As the scientific investigations proceeded, in 1929, the Canadian scientists repeatedly asked Metzger for the opportunity to share data or cooperatively investigate, but Metzger strategically refused since he did not want to hurt the farmers' case by giving too much information to the other side. Years later, in 1933, as the US federal government threatened to reduce research funding, scientists submitted several papers to the SFC and the US State Department for approval for publication. These papers contained evidence for the invisible injury thesis, what later became popularly known as acid deposition. Metzger again refused to allow their publication due to his view that the science should serve the farmers, and that the results in the papers were sufficiently inconclusive that they would

introduce information unfavorable to the legal case that the Americans were not under obligation to divulge (Wirth 1999).

Another compelling indicator of the influence of the landed interests on the US government is the US's decision to reject the original IJC recommendation and reopen the dispute. Referring to this decision, Russell Miller (2006, 169) reports that the “CPA came to dictate and control the American side of this international dispute.” Members of the US State Department involved were generally in favor of accepting the IJC recommendation and ending the matter there, since it would at least serve as a precedent for the award that would be offered in other disputes while the scientific report could be used for future transborder claims. Secretary of State Henry Stimson was reportedly pleased with the award (Wirth 1999, 36), and Griffin wrote to Skinner about the vindication of the scientific evidence that the IJC decision offered:

That part of it, I believe, is the feature which tempts [the State Department and the USDA] to consider acceptance of the plan. They believe that a settlement, based on even \$350,000 would be a fitting capstone for our scientific efforts and achievements, such as they are. [Metzger] considers that our report when finally compiled (and supported and strengthened by a substantial award to agrarian interests) would be of value as a precedent in the consideration of other similar problems, as they might arise in the future (quoted in Wirth 1999, 36).

Thus, although the settlement would not mean the creation of a formal regulatory regime, it would still give the US State Department some precedent and thus ensure that the effort had not been largely wasted.

Other members of the SFC supported the IJC recommendation on the basis that it would help the farmers deal with their plight. Dr. M. C. Goldsworthy, a scientist with the

US Bureau of Plant Industry, said, “we were quite happy to hear of the award and think it a great victory for our side.” He added that it “should go a long way towards alleviating the conditions of the settlers in the immediate vicinity of the border where the damage is quite large” (quoted in Wirth 1999, 37).

The CPA opposed the settlement on the grounds that the award was too low and did not sufficiently reduce or eliminate the pollution. Responding to their demands for more, Senator Dill, Congressman Hill, and the Washington Governor Clarence Martin supported the farmers by contacting the State Department. The US State Department reopened the case in 1933, and the newly-elected President Franklin D. Roosevelt became involved in 1934 by encouraging the issue to be resolved. The importance of the CPA in the Arbitral Tribunal hearings was so great that US State Department attorney Metzger even met with them in 1935 to discuss legal strategy, including the importance of letting Canadian scientists into the town; not demanding that all pollution traveling into the town necessarily cease; and agreeing to abide by the eventual findings of the tribunal (R. A. Miller 2006; Wirth 1999).

During the entire negotiation process, American industry had been following the unfolding events and helping the Trail Smelter with their scientific case. The State Department's objective in creating a precedent for dealing with point source pollution meant that much was at stake. The advocate for industry in the US government was the US Bureau of Mines (USBM), which saw its role as helping industry to modernize so that recovery techniques could be improved and the products marketed profitably. Their interest was focused primarily on the technical fixes possible for air pollution, and less on the specific damage the landowners were suffering. One scientist from the USBM

testified in the IJC hearings, after reviewing the smelter's abatement efforts, that they were exceptional and that they were doing everything possible. Any extra sulfur dioxide that would have to be vented, he said, should be dealt with amicably with the townspeople—not confrontationally as was happening. Later, the USDA commented that this scientist's testimony “didn't do the farmers any good” (quoted in Wirth 1999, 40). It is impressive that, despite this industrial opposition within the US government, the landowners in Northport were able to achieve as much as they did in the period culminating with the IJC settlement.

However, the State Department started talking even tougher after the case was reopened (making proposals for more restrictive measures than were initially sought), thus encouraging industry to be even more involved in the federal decision-making process. US smelter interests lobbied Metzger directly and, when he did not respond favorably, attempted to have him replaced. So blatant were the attempts of American smelters to help Consolidated and the Canadian case that the US State Department threatened to prosecute them on the basis of the anti-sedition Logan Act (Wirth 1999; R. A. Miller 2006). Russell A. Miller (2006, 170) thus comments that “Canada served as a front for the advancement of the global mining and smelting industry’s agenda every bit as much as the United States served as a vehicle for advancing the interests of the CPA.” Nevertheless, when Metzger died in early 1937, with him went some of the landowners' influence, and the door opened for a new attorney more sympathetic to industrial interests (Wirth 1999).

Metzger's role as the main US attorney was filled by John Raftis, the landowners' attorney since the beginning, but Metzger's replacement as the US agent from the State

Department was Swagar Sherley (Wirth 1999; R. A. Miller 2006). When both the landowner-friendly USDA and the industry-friendly USBM requested the opportunity to appoint the US scientific adviser, Sherley supported the USBM. The scientist appointed was Reginald C. Dean, the chief engineer at the USBM Metallurgical Division (Dean and Swain 1944; Wirth 1999). He was a renowned expert on smelter smoke dispersion and favored a cooperative and non-confrontational approach to resolving matters such as this through technical means (Swain and Dean 1941). Favored by industry, Dean was opposed to Metzger's means of addressing the Trail Smelter Dispute and expressed a desire to discredit the USDA. His testimony before the Arbitral Tribunal damaged the cause of the landowners, and his research was eventually published in joint authorship with Robert Swain, the Canadians' scientific adviser (Dean and Swain 1944; Allum 2006; Wirth 1999).

As the public hearings before the Arbitral Tribunal and background negotiations progressed, they did so without much influence from the CPA. Its chairman, Leaden, had suffered a second stroke in February 1937, depriving the organization of its most enthusiastic voice and, at any rate, the CPA's advocates within the SFC had been outmaneuvered by the USBM. When the control regime was finally imposed on the smelter by the Arbitral Tribunal, it was at the recommendation of Dean and Swain, the industry-friendly scientists (Wirth 1999; Swain and Dean 1941; Dean and Swain 1944).

The USDA scientists has wanted the Tribunal to accept the “invisible injury” thesis contending that cumulative damage over time affects the growth of vegetation. Had they established this, the control regime would have been much stricter, perhaps with mandated production shutdowns in order to meet the pollution standards. The fact that

this did not happen underscores the power of industry in pushing for technical fixes that enabled the Trail smelter to continue operating at full capacity. Commenting on this power asymmetry, Allum (2006, 23) says:

as the expert emerged as the authentic voice of authority, the farmers suffered a corresponding decline in credibility. The opposite of the expert was, of course, the amateur, the layman, the opinion witness – names which were all frequently applied to the residents of Stevens County. In the absence of expert knowledge, the farmers were deemed to have little understanding of the complex processes that resulted in environmental degradation or its consequent environmental impact.

This, of course, does not come as a surprise and is not a novel finding. What is exceptional about the Trail Smelter incident is that the smelting industry was forced into a position of having to develop these technologies as a compromise with landed interests.

Allum (2006, 16–17) thus opines:

a review of the historical record suggests that any credit for this ruling ultimately belonged to the so-called smoke farmers south of the line who endured acute suffering to preserve their right to live in an environment free of the hazards of toxic wastes. Theirs was not a movement inspired by agrarian purity or aesthetic ideals but by the vision of building a progressive rural community whose potential was being suffocated by fumes.

The key point is that the political will to address transboundary air pollution did not exist in the federal government. After all, the SFC was divided as it struggled to balance the interests of both the CPA and industrial business interests. The US State Department wanted the matter closed and was willing to accept the absence of an operating regime in order to move on. Instead, the political will came from the landed interests who wanted to protect the value of their property and the use of their land. In the end, the Northport

farmers received less than they sought, but much more than they would have had they not organized and pressured their elected representatives.

This finding nevertheless differs slightly from other instances of the application of property-based economic interest theory to air pollution. As stated earlier, Gonzalez (2005) argues that the source of air pollution policy is the urban milieu, where landed interests pressure local and state governments to address air pollution, and which in turn formulate policy in consultation with industry. Here the source of the policy rests with rural landed interests with sufficient political will, as well as the US executive branch departments that supported them, and the tribunal that made the decision. This finding mirrors the evidence presented in the Chapter 3 on the American regime; namely, that often air pollution policy is formulated federally, but that the political pressure for substantive policy nevertheless derives from the landed interests who, in many instances, lobby federal representatives for statutes and rules, and state governments who sue the executive for the enforcement of these laws.

1.3. Eco-modernization

Despite openly demanding that smoke visitations cease, the farmers downwind of Trail benefited economically from the presence of the smelter as long as it was not rendering their land unusable. The fact that a compromise between landowners and industry in the form of a technological fix (rather than a complete cessation of pollution) was necessary had been understood by the case's lead attorney in the US State Department, Jacob Metzger. He wrote in early 1935 that "Developments in the last few years indicate that the smelter cannot operate profitably without causing injury in the United States" (quoted in Wirth 1999, 69). Similarly, Reginald Dean, the assistant

director of the USBM, wrote in 1945 in response to an inquiry by an Ontario judge about the smelter in Sudbury:

Due to the huge economic damage which would be done by shutting down such a smelter . . . any move made should be carefully considered. The metallurgical industry itself wants to become a better industry and to recover all waste products that can be recovered economically. Doubtless all authorities want to see any changes recommended so designed as to increase rather than decrease the economic output of such an enterprise. The Trail Smelter in British Columbia has gone far in this direction and can probably serve as the present living model on just how to mitigate smelter smoke nuisances (quoted in Wirth 1999, 87).

After reading the 1941 decision by the Arbitral Tribunal, Robert Swain and Reginald Dean (1941, not paginated) wrote to one of its members to clarify a point so that the decision would not be misunderstood as to be unduly strict:

If a strict interpretation were placed on this statement as it stands, it would lead often to a complete shut-down of all operations at this Smelter . . . Small amounts of sulphur dioxide will necessarily escape from the blast furnace and other operations in the Smelter, but these have never been specifically designated in any of the regimes which we have laid down, simply because they are in insignificant amount. In the orderly administration of this final regime, all who have been connected with the previous regimes would not fall within the above stipulation. If, however, the strictest possible interpretation were insisted up on the results would not only be disastrous to the Smelter, but clearly outside of the intended scope of the regime. Tail gases have been recognized all along as a normal part of the smelting operation.

These quotes by US officials involved in the Trail Smelter Dispute indicate that the balancing of local (environmental) values with industrial interests was coterminous with

air pollution abatement.

For the Trail Smelter case study, ecological modernization took the form of developing advanced fume-control technologies to recover sulfur dioxide at the stack and sulfides in the mines, acid plants, and the SCS. These measures would be known as “best available technology” (BAT) in today's language. The process began in earnest in 1926, shortly after the complaints began. Consolidated found a new process for removing more sulfides from concentrates at the Sullivan mine, and developed a method for burning concentrates in zinc roasters, which enhanced sulfur dioxide recovery. In 1929, Consolidated began construction of an acid recovery and fertilizer complex aimed at cleaning up the lead smelter and collecting marketable chemicals (Dean and Swain 1944; Howes and Miller 1929). These measures substantially reduced the sulfur dioxide traveling over the border and were lauded by the IJC in their initial decision. After the case was reopened by the US State Department, Consolidated took even more technological measures, this time working with scientists from both the Canadian and US governments in developing a control process involving additional improvements at the plant and what became known as the SCS (and which itself was used as a control technique in the industry until the 1980s) (Wirth 1999; Dean and Swain 1944).

These changes gave the company the reputation in North America as an industry leader for smelter pollution prevention. They benefited Consolidated in many ways, such as improving plant efficiency and creating profitable production by-products such as fertilizers. The sulfuric acid captured by the acid plants was used to produce ammonium sulfide, which was marketed under the Company's Elephant brand fertilizer to Prairie farmers along the Canadian Pacific Railway. This industrial byproduct was a profitable

product until the 1970s (Read 2006; Wirth 1999).

Even with all of the abatement measures taken, the plant was able to run at full capacity during WWII. They also benefited the landowners since the continued existence of the smelter and the associated economic development, coupled with the reduced pollution, arguably raised land values. Even in the middle 1920s, when Consolidated began this process and the technology was in an early state of sophistication, optimism abounded. In an enthusiastic pronouncement eerily similar to the “new policy instruments” discourse some sixty-plus years later, Stanford chemistry professor, noted smelter pollution expert, and Consolidated consultant Robert Swain (1923, 301) said, “The old age of litigation between industry and agriculture could now be replaced by cooperation, to everyone's benefit.”

1.4. Effectiveness of the Regime

Many of the technological innovations that improved the quality of the air traveling over the border were developed before the 1938 decision. These were in response to complaints by farmers on both sides of the borders and can be accurately understood as elements of the informal dimension of the regime. But as this chapter claims that the farmers pushed the US State Department to further tighten the regime with legally binding standards, it is important to provide an account of how these standards altered the behavior of the smelter and how they resulted in reduced emissions.

In 1930, sulfur emissions from the Trail Smelter averaged about 10,000 tons a month. This was reduced to 3,400 in 1932, due jointly to the installation of sulfur recovery technology and production cutbacks (Dean and Swain 1944). Wirth (1999) suggests that cutbacks were related to the Depression. The subsequent SCS emissions

control measures required by the Arbitral Tribunal were not only stricter, but also came at a higher cost to Consolidated (Dean and Swain 1944; Wirth 1999). They called for a reduced sulfur base load during the growing season, from April to July, and especially large reductions from 3 AM To 9 AM. The standard of 100 tons of sulfur per day during this time of year was substantially less than the 300-350 tons that had been emitted during 1930. To implement the SCS, Consolidated used sulfur recorders to provide feedback and information about when emissions should be reduced or stopped (Dean and Swain 1944).

The SCS appears to have worked well, as the Arbitral Tribunal concluded in 1941 that no damage had occurred in Northport since it had been enacted a few years earlier (Trail Smelter Arbitral Tribunal 1941). The regime substantially reduced smoke visitations across the border and further limited crop damage while also enabling the smelter to run at full capacity during WWII (Wirth 1999). Griffin was so impressed with these reductions that in 1937 he suggested “the smelter management itself is finally and inadvertently providing a standard or reference value (in respect to future sulfur dioxide emissions) which would be satisfactory to us and which demonstrably they can meet and which, in fairness and reasonableness they may be expected to meet and yet operate their works” (quoted in Wirth 1999, 82). Wirth (1999) speculates that the degree of the reduction in sulfur dioxide as a result of the SCS regime was so substantial that the reductions would have been only marginally more had the invisible injury thesis been upheld. The success of the SCS regime continued throughout WWII and, by 1949, George Hedgecock's associate, Theodore C. Scheffer, reported that the worst-affected trees on the US side of the border had not been damaged since 1940 (Scheffer and

Hedgecock 1955).

As such, it appears that the regime was very effective—both in terms of limiting the pollution that visited the town of Northport and in fostering the development of abatement technology that was available for the entire smelter industry to use. It was not for a generation or more that scientists learned about how a sulfur dioxide dispersion regime is insufficient to protect against vegetation damage due to the previously-unknown phenomenon of acid deposition.

2. The Canada-United States Air Quality Agreement, 1978 to Present

The story of the science of acid rain in Canada, the media response, and the Canadian government's response on the domestic front was covered in the last chapter. Among the seven Eastern provinces and, most importantly, within the Ontario government, the response during the middle of the 1980s was to regulate the largest polluters enough to bring about a fifty percent reduction in sulfur dioxide emissions from stationary sources. In the United States, New York, which was on the receiving end of acid rain-causing pollutants created a control program in 1984, and the 1990 CAAA included a nationwide sulfur dioxide trading system. Acid rain, and its chemically-related problem, ground-level ozone, continued as a political issue in the Northeast into the 2000s, resulting in a series of research and control initiatives, most recently the CSAPR of 2011. While these domestic programs have been effective in limiting the release of specific air pollutants, has the accompanying Canada-US bilateral regime exhibited the same level of success? What have property-based economic interests contributed to the development and implementation of the bilateral AQA?

The AQA has been the topic of a considerable amount of scholarly literature. As the issue unfolded during the early 1980s, Schmandt and Roderick (1985) edited a volume on the acid rain problem on the Canada-United States border, providing a detailed account of the science and politics of the issue, and exploring the possibilities of a bilateral cooperative response. Subsequently, numerous scholars specializing in environmental politics and policy or US-Canada relations have used the AQA as a case study aimed at making broader points about bilateral cooperation (Hoberg 1991; Doern and Conway 1994; D. R. Boyd 2003; VanNijnatten and Lambright 2002; VanNijnatten 2003; Cataldo 1992). Civil servants involved with the negotiations and implementation of it have written articles describing its programs and promoting its effectiveness (Barton 2008; Barton and Slater 2010; McLean and Barton 2008). However, the scholar who has researched the issue the most, from the beginning of the issue in the late 1970s to the present, is Don Munton. His research has examined the topic from multiple angles, including the development of the science, the negotiations throughout the 1980s, linkages between the AQA and the multilateral Convention on Long-Range Transboundary Air Pollution (LRTAP), the politics of the United States' and Canada's domestic programs, and the effectiveness of the AQA (Munton et al. 1999; Munton 2007; Munton 1997; Munton 1980). While, taken together, this literature is extensive, still lacking is an account of the role played by property-based interests in lobbying for and implementing the regime, and of the domestic politics in the United States and Canada as they relate to the negotiation of the 2000 Ozone Annex. Yet this is important—understanding if and how property-based stakeholders have had access to the bilateral air pollution policy

process leading up to the creation of the treaty and during its implementation and revisions is necessary for an assessment of its relevance as a policy instrument.

In what follows, this chapter section argues that, while the negotiations for the AQA were politicized by diverging interests seeking to have their policy preferences represented in the treaty, the lobbying efforts of Canada's property-based interests were not successful in encouraging the creation of a treaty that would guide bilateral air pollution policy. Not only has neither country committed to air pollution reductions that were not already underway in domestic programs, the subsequent implementation of the regime have rendered it de-politicized as political actors seeking air pollution relief have not appealed to it for a resolution of their grievances. As such, and despite substantial transboundary air pollution transport, the Canada-US bilateral air pollution regime is a status-quo policy arrangement.

To establish this argument, this section of the chapter begins by presenting a overview of the development of the AQA, first covering the period leading to the signing of the treaty in 1991, and then of the context in which the 2000 Annex on ground-level ozone was agreed. Initially, during the late 1970s and early 1980s, Canadian officials sought to negotiate a bilateral treaty with binding commitments from both sides for substantial sulfur dioxide reductions. Canada pursued these reductions unilaterally with the ECARP of 1985, while the US national plan was not formally created until 1990. Later, a confluence of factors occurring with respect to the domestic air pollution programs in both countries—including aggressive American policy aimed at lessening nitrogen oxide emissions and the deregulation of Ontario's energy sector accompanied by the installation of nitrogen oxide abatement technology on the province's coal-fired

power plants—led, in the late 1990s, to circumstances favorable to bilateral commitments on ground-level ozone reductions. After this historical overview, this chapter section discusses the role that property-based interests have performed in the negotiations for and in the implementation of the Canada-US bilateral regime. Here it presents a case study of the political response to the reopening of a grandfathered coal-fired power plant on the American side of the Detroit-Windsor border area. A coalition of property- and health-based groups on both sides of the border objected to the conditions under which Detroit Edison was planning to operate the plant. Throughout the process leading to the resolution of the issue, CAA rules were appealed to and eventually enforced, while the AQA and its secretariat were noticeably irrelevant. Following this, Young and Levy's (1999) criteria of international regime effectiveness is applied in an assessment of the AQA.

2.1. Negotiating the Air Quality Agreement, 1978-1991

Accompanying Canada's actions to control its domestic sources of acid rain throughout the late 1970s and 1980s was a series of efforts to have transboundary air pollution mitigated through diplomacy. Interestingly, the diplomatic process began with the US government concerned about pollution sources planned to be built on the Canadian side of the border. Months after federal Environment Minister Romeo Leblanc called acid rain an "environmental time bomb" in a speech to air pollution specialists in Toronto during June 1977, American conservation and pollution control groups, and Minnesota and federal elected representatives expressed concern over the planned building of an Ontario Hydro coal-fired power plant in the town of Atikokan on the Ontario-Minnesota border (Howard 1977). They claimed that plant would contribute to

acid rain in Minnesota and also damage the region economically by contributing to the region's ambient load of pollution, thereby limiting future economic growth. With the technology it was planned to be built with, the Atikokan plant would have been illegal in the United States under the PSD clause of the CAA. However, as Ontario did not mandate specific technology on new sources, it could be built inexpensively without sulfur dioxide scrubbers and not violate the province's air pollution laws. Another coal-fired power plant—this one in Saskatchewan, close to the Montana border, attracted criticism from the United States in 1978 (Editorial 1978b). The result was a rider attached to the Foreign Relations Authorization Act (1978) directing the US State Department to commence negotiations with Canada on a bilateral air pollution agreement (Canadian Department of External Affairs 1978). Stewart and Wilshusen (1985) emphasize a direct link between this incident and the subsequent creation of a scientific fact-finding committee. Indeed, consultation between the US State Department and the Canadian Embassy led to the creation of the Bilateral Research Consultation Group on the Long-Range Transport of Air Pollutants (BRCG).

The BRCG was tasked with consulting on ongoing research efforts and enabling the exchange of information about the transport of air pollutants across borders. It produced an interim report in 1979, followed by a final report in October 1980 (Editorial 1979c; Howard 1979d; Editorial 1980h; BRCG 1980; BRCG 1979). In these, the scientists claimed that acid rain was causing irreversible damage to aquatic ecosystems and that it may also be causing damage to forests, soils, and buildings. The reports also identified the main culprits of the pollutants—nonferrous smelters in Canada and thermal generating plants in the US—and stated that seventy to eighty percent of the pollutants

crossing the border were from the United States, yet that much of Canada's air pollution was domestically produced.

The summer of 1978 is also when the issue of acid rain became prominent in the Ontario and Canadian press. Numerous articles in the *Star* and the *Globe* discussed the ecological effects and speculated as to what acid rain potentially meant for Ontario's tourism and forestry economy (Howard 1979a; Howard 1978; Editorial 1979a). As discussed in Chapter 4, the editorial position of these papers—initially the *Star*, and later the *Globe* as well—was that Canada should pressure the United States for a bilateral treaty on acid rain. The *Star*'s editorial board initially suggested something similar to the 1972 Great Lakes Water Quality Agreement, which specifies cleanup targets for the Great Lakes and funds research on how to address the problem (Editorial 1979b; see also Cohen 1979). As the negotiations progressed, the *Star* began calling for a much more stringent regime, “one that contains specific and strict anti-pollution regulations that apply to those industries contributing most to the international acid rain problem, and one that would establish a joint body with the authority to enforce those regulations” (Editorial 1980d, A8). Noting that polluters in each country lack an economic incentive to pay for control technology to abate pollution that falls on the other, the *Star* advocated the creation of a bilateral mechanism similar to the CAA:

If, for example, scientific evidence points to the Ohio Valley as a major source of the acid rain falling on Canada, then the factories in that area must be required to install the necessary anti-pollution devices to bring their noxious emissions down to levels that are acceptable to both Ottawa and Washington. And of course, the same should go for Inco, the Nanticoke power station or other Canadian installations if they are shown to contribute substantially to the U.S. acid rain problem (Editorial 1980e, A8)

Informal bilateral talks were conducted during November and December 1978 and June 1979, leading to a joint statement released on July 29, 1979 (Anon. 1979a; Canadian Department of External Affairs 1978; Stewart and Wilshusen 1985). Although non-binding in legal terms, the countries used the statement to commit to the development of a bilateral air quality agreement, and listed the principles and practices to be addressed in the formal negotiations. These included the reduction of transboundary air pollution; the development and implementation of control strategies; expanded notification and consultation on matters related to the risk of transboundary air pollution; the exchange of scientific information; increased monitoring, the use of environmental assessments; and the implementation measures for an agreement (Stewart and Wilshusen 1985).

However, a shift in American energy policy in response to the 1979-1980 oil crisis made binding bilateral commitments unlikely in the near term. In order to lessen the US's dependency on foreign oil, and in the middle of a presidential election, the Carter Administration announced a plan, in March 1980, to increase the use of coal in the production of electricity (Editorial 1980a; Kipling 1980; Sheppard 1980). The bill, which was passed in the US Senate in June 1980 with a near-unanimous vote, required eighty power plants in the Northeast to switch from oil to coal and gave \$4 billion in subsidies to make it happen (Martin 1980a).

In light of this policy shift, the US negotiators were tightly constrained. The US State Department's authorization said, "The U.S. will not negotiate an agreement calling for additional U.S. financial obligations" (Kipling 1980, A8). Also, that the US would seek to convince Canada to "begin steps looking to the establishment of strong federal

controls along the lines currently in force in the U.S.” Given that the Ontario environment minister had issued provincial control orders during the summer of 1980 regulating Canada’s single largest producer of sulfur dioxide, Inco, and was close to regulating Ontario’s second-largest polluter, Ontario Hydro, the Canadian negotiators wanted to receive reciprocal commitments from the Americans. When this appeared unlikely, the strategy changed to “pressing for an interim understanding which would oblige both countries to use existing legislation to the limit while a full agreement [was] being prepared” (Sheppard 1980, 26).

The Memorandum of Intent concerning Transboundary Air Pollution (MOI), signed on August 1, 1980, was the first major development in the Canada-US bilateral air pollution regime since the Trail Smelter decision. Reflecting the content of the LRTAP convention signed the previous year, the MOI set up five technical working groups to facilitate the exchange of scientific information and research cooperation (Martin 1980b; Editorial 1980f; Munton et al. 1999). In it, both countries also agreed to negotiate and create a bilateral agreement to combat transboundary air pollution within two years, and to “take interim actions available under current authority” (quoted in Pallemmaerts 1988, 201). This last phrase is significant because it appears to suggest that the AQA would be accompanied by an expanded authority to govern acid rain-causing emissions. The MOI also established a joint coordinating committee which was to begin formal negotiations within ten months.

Within months of the signing of the MOI, however, Ronald Reagan was elected President and with him came an administration endeavoring to relax the environmental regulations on industry, not tighten them. Air pollution governance was particularly

vulnerable to this, as the CAA was up for reauthorization and the administration saw this as an opportunity to make it more friendly to the non-local businesses that have greater influence in Washington. The fact that the CAA was essentially “up in the air” at this point meant that the Reagan Administration wanted nothing to do with binding bilateral commitments (Editorial 1981a; Stewart and Wilshusen 1985; Munton 1997; M. Keating 1981a; M. Keating 1981d; Honderich 1982). Indeed, during 1981, several coal-fired power plants in the United States were given relaxed sulfur dioxide standards (Anon. 1981b; Anon. 1984a).

The first negotiation session took place on June 23, 1981 and lasted only one day; a second session occurred the following November (M. Keating 1981e; Editorial 1982b). Both consisted of exchanges of ideas and scientific information, and during the sessions the US State Department made it clear that the Reagan Administration was considering relaxing the CAA. It was at the third session, in February 1982, that the negotiators for Canada introduced their official proposal: fifty percent cuts in sulfur dioxide emissions by 1990, in order to achieve a specific wet deposition target in sensitive areas. The American negotiators rejected this proposal and did not counter with their own pollution control measures. Rather, they offered to undertake an effort to put lime in damaged lakes, and argued for more cooperative research to clarify uncertainties and provide a scientific basis for a future strategy (Editorial 1982b; Rusk 1982; M. Keating 1982b). The last negotiation session took place in June 1982, shortly after which the Canadian federal environment minister criticized the Reagan Administration of “blatant efforts to manipulate acid rain work groups” (quoted in M. Keating 1982a, 4). He said “non-experts (were) re-writing the conclusion and unhappy scientists were reassigned. Some

of them lost their jobs.” Furthermore, this “external interference and inadequate support of the work continued over the past year and a half.” At that point Canada withdrew from the negotiation process and Canadian governments decided, during 1984 and 1985, to deal with the problem domestically, without bilateral commitments (Stewart and Wilshusen 1985; Munton 2007). The working groups remained active during the period of suspended negotiations, however, and informal talks continued (M. Keating 1983a).

The next burst of activity occurred in 1985, in what Munton (2007) calls the 1985-87 “summits phase” of the negotiations. After the Canadian federal government announced the ECARP (discussed in Chapter 4), several Reagan-Mulroney summits occurred aimed, among other things, at thawing the relationship between the two countries. The first of these meetings took place in Québec City, and was popularly referred to as the “Shamrock Summit” given that it occurred on March 17 (St. Patrick’s Day) and both Reagan and Mulroney claimed an Irish heritage (Editorial 1985a; Ostrowidzki 1985; M. Keating 1985c; Editorial 1985c). In this summit, Reagan agreed to appoint a high-ranking envoy to a working group to conduct more scientific research. The Canadian government appointed former Ontario Premier William Davis as its representative, and the Reagan Administration appointed former transportation secretary Drew Lewis (Editorial 1985d; Cruickshank 1985). The report, released in January 1986 and derided by the *Globe* (1986a, 6) as “the lowest common denominator,” concluded that acid rain is a substantial problem requiring immediate action and recommended that the United States spend \$5 billion on pollution control technology. It placed emphasis on the voluntary development of technology and called for the two countries to share information on it (Editorial 1986a; Howard and McLaren 1986). In the 1986 summit,

Reagan “accepted” this conclusion and said he would try to find ways to make sure \$5 billion was spent on projects to demonstrate acid rain control technology (Anon. 1986a; Downey and Keating 1986). However, no substantive policymaking immediately followed, and Henry Waxman, the chair of the US Senate subcommittee working on acid rain legislation, said that by endorsing the report Canada was “pulling the rug out from under us” (quoted in Hepburn 1986a, A2). In the 1987 summit, Reagan said that he “agreed to consider” a bilateral accord (Cohn 1988, B5). Subsequent negotiations revealed that the US position had not changed since 1982 and were suspended (Munton 1997). However, the development of American air pollution policy (discussed in Chapter 3), in early 1989, suggested that the newly-elected Bush Administration would agree to a bilateral arrangement on acid rain (Harper 1989). By then it was clear that the CAA would be amended in a way that would substantially reduce sulfur dioxide emissions (Spears 1989).

Formal negotiations for a Canada-US bilateral treaty began again during the summer of 1990, shortly before the 1990 CAAA passed, and after informal negotiations the previous year. Many of the details of the 1990 CAAA had become known sufficiently that the US would be able to discuss specific bilateral commitments. Furthermore, the Canadian federal government had decided to adopt the new, more stringent US automobile emissions standards (Israelson 1989). The change in the US’s bilateral policy position on acid rain was due to various contingencies in American domestic politics and unrelated to any pressure from Canada, but it still offered the Canadians the possibility of a symbolic victory when public opinion was strongly in favor of a bilateral accord and Prime Minister Mulroney had “made a government-to-government accord a cornerstone of

his policy to fight acid rain” (Harper 1989, A2).

In the treaty, Canada made three commitments in terms of its domestic policy. First was a national cap on sulfur dioxide emissions of 3.2 million tons by the year 2000. This went beyond the late 1980s Eastern Canada Acid Rain Plan's 2.3 million ton cap since the AQA required cuts by all ten provinces, including those in the West. For both countries, this amounted to forty to fifty percent sulfur reductions in critical areas. The second change Canada agreed to implement was tighter standards on automobile emissions, reflecting those in the United States. Third, Canada was to develop a program to protect the environment in wilderness areas. At the time—and the same is arguably true at present—the federal government’s only formal mechanism for achieving this end was the environmental assessment process, and with it the possibility of halting a construction project if it appeared to damage the environment. US negotiators, reflecting the concerns of US senators in protecting the air in border wilderness, wanted a program similar to the PSD in the CAA (discussed in Chapter 3). The compromise arrived at was that the AQA recognized the importance of protecting parks and wilderness areas from air pollution and, in that same section, Canada agreed that it would “develop and implement means affording levels of prevention of significant air quality deterioration and protection of visibility . . . with respect to sources that could cause significant transboundary air pollution” (AQA 1991a, sec. 4). While the wording of this commitment is ambiguous, it appears to refer to the implementation of technological controls similar to what is required under the CAA. Munton (1997, 342) argues that this serves as a “promissory note” rather than a new standard, yet it also reflected a potential new focus for Canadian air pollution governance.

The Canada-United States Air Quality Agreement was signed by Prime Minister Mulroney and President Bush in Ottawa during March 1991, taking the form of a framework convention with two protocols, or “annexes” (Editorial 1991). It set up a permanent secretariat, the Canada-United States Air Quality Committee (AQC), with the task of producing biennial progress reports and meeting regularly. The specific commitments by the two countries were enshrined in the annexes to the AQA convention. Annex 1 contained the specific air pollution abatement requirements, including those discussed above. Additionally, the United States agreed to a 10 million ton reduction of sulfur dioxide emissions from 1980 levels by the year 2000, equal to the 8.9 million ton cap under the 1990 CAAA acid rain program (AQA 1991b).

Annex 2 is less important in terms of emissions cuts and air pollution governance, but still significant in terms of the activities of the AQC. It required that the two countries cooperate on air pollution monitoring, exchange emission information, develop compatible methods of reporting and measuring, and share abatement technology and other research performed about how to limit emissions. For the two decades since the signing of the AQA, Annex 2 has been represented mainly by the biennial progress reports released by the AQC.

After the passage of the initial annexes, environmental governance in the United States and Canada became a back-burner issue as the Republicans took over Congress in 1994 on a purported deregulatory mandate, and Environment Canada lost nearly a third of its budget and a quarter of its staff at the same time due to budget reduction efforts. The next milestone for the AQA did not come until the negotiation and signing of Annex 3 on ground-level ozone in 2000.

2.2. 2000 Ozone Annex

In the wake of scientific evidence about the health effects of ground-level ozone and abatement efforts undertaken by both the United States and Canada during the 1990, an annex specifying nitrogen oxide reduction commitments was added in 2000. The political issue of ground-level ozone was addressed through multiple programs in the United States during the 1990s. The 1990 CAAA created the Ozone Transport Commission (OTC) consisting of all of the Eastern States from Virginia to Maine. The OTC was funded by the EPA and had the task of proposing policies to the agency that would help states reach NAAQS for ground-level ozone (see Nordenstam et al. 1998). The statute also required seventeen states with serious smog problems to submit new SIPs using photochemical grid modeling by November 1994. Only one state actually submitted the SIP by the deadline, for a variety of reasons—among them a lack of expertise in this type of modeling, and a realization by officials in downwind states that it would be impossible to construct a SIP presenting a scenario in which compliance was possible (Farrell and Keating 2002). Rather than the federal government taking over the SIPs, as it is required to under the CAA when a state fails to submit (something that would have been politically difficult given that the Republican party had recently gained a majority in both houses of Congress), an alternative arrangement was decided on, namely, the formation of the Ozone Transport Assessment Group (OTAG). Taking place from the summer of 1995 to the summer of 1997, the OTAG engaged in policy-relevant scientific research such as atmospheric modeling and technological and economic feasibility studies, and was aimed at developing a scientific consensus about the nature of

the ground-level ozone problem and about possible measures to address it (Farrell and Keating 2002).

After the OTAG concluded, the OTC states encouraged the EPA to create a rule aimed at mitigating the transport of nitrogen oxide. The “NO_x SIP Call” was issued in 1998 and required twenty-two states to reduce emissions of nitrogen oxides through the creation of “NO_x Budgets”. It was challenged in court by several of the states falling under the rule, yet upheld in a March 2000 ruling (McCubbin 2001; D.C. Cir. 2000; VanNijnatten 2003). (This rule was eventually replaced by the Cross-State Air Pollution Rule in 2012). Debra VanNijnattan (2003) reports that since 2000 was an election year and the possibility of a Bush Administration loomed, the OTC states were eager to lock in the NO_x SIP Call by having it entered into the text of an international agreement.

Furthermore, the most important ozone-related clean air policy change at the time was the litigation over NSR (discussed in Chapter 3). By the time at which the Ozone Annex was under negotiation, the Clinton Administration had initiated the NSR enforcement actions and, even though this process was later temporarily derailed by the W. Bush Administration’s attempt to gut new source review through rulemaking, it was not clear at the time of the Ozone Annex negotiations who would be elected in the November 2000 presidential elections.

In Canada, ground-level ozone became an issue of popular attention in the late 1990s as three events occurred. First, Ontario Hydro mothballed several nuclear facilities and increased the generation of electricity from its five coal-powered stations (Mittelstaedt 1998b; Mittelstaedt 1999a). This had the effect of substantially increasing the release of smog precursors and was accompanied by an increase in Toronto’s urban

smog since the nearby Lakeview power plant was receiving the most additional use. Second, Ontario passed the Energy Competition Act, deregulating the province's energy production and creating Ontario Power Generation (OPG) as the entity that would produce most of the province's energy (Mittelstaedt 1999a). This energy would then be sold on the open market, creating imperatives for OPG to lower production costs to remain competitive. Third, throughout the mid- to late 1990s, the federal and Ontario governments had relaxed regulatory pressure by downsizing environmental ministries and reducing the quantity of enforcement actions on polluters (Macdonald 2007; Mittelstaedt 1999b; Mittelstaedt 1998a). In the late 1990s, the provinces gained more control over environmental governance with the 1998 Canada-Wide Accord on Environmental Harmonization (CCME 1998). This agreement was implemented by the Canadian Council of Ministers of the Environment (CCME), comprised of all of the country's environmental ministers, which would meet regularly to set non-mandatory Canada-wide objectives for environmental governance (Gallon 2000). Among these were Canada-wide standards for a range of air pollutants. In a June 2000 meeting, the CCME set non-binding ambient standards for ground-level ozone, particulate matter, mercury, and benzene (see K. Harrison 2002).

In response to its increased smog problem and concerns that energy deregulation would further worsen Toronto's smog problems by encouraging the power plants to produce at full capacity while concurrently avoiding measures to abate pollution, Ontario lowered OPG's nitrogen oxide cap slightly from 38,000 tons per year and its sulfur dioxide cap from 175,000 tons per year to 157,000 per year. The *Globe* reported:

The relatively small reductions mean the company or future owners of its stations will not have to install expensive new emission-control technology, and the province will consequently net higher proceeds in any sale (Mittelstaedt 2000a, A8).

Nevertheless, the Toronto Board of Health repeatedly recommended to the Ontario government, from April 1999 to September 2000, that OPG be required to convert all of Ontario's coal-fired power plants to natural gas (Basrur 2001). OPG did not convert its plants to natural gas but instead, in September 2000, volunteered to install selective catalytic reduction (SCR) units, a relatively inexpensive technology for lessening nitrogen oxide emissions, on its Lambton and Nanticoke stations. These SCR units were expected to reduce nitrogen oxide emissions from the two plants by roughly thirty percent per year, but this is substantially less than switching to natural gas would have reduced nitrogen oxide, and has no effect on emissions of other chemicals such as sulfur dioxide, carbon dioxide, lead, and arsenic (Mittelstaedt 1998b; Basrur 2001). The Toronto Board of Health responded in March 2001 by formally requesting that the federal and Ontario environmental ministries conduct environmental assessments on these power plants and give consideration to the alternative of converting to natural gas.

Negotiations for the Ozone Annex began in February 2000 with the goal on both sides of concluding an agreement before the November presidential elections (Mittelstaedt 2000b; Anon. 2000). From the beginning, it was clear that the United States had a stringent new program in place expected to bring about substantial reductions in nitrogen oxide emissions from electrical utilities, while Canada had little to offer. Given that New York State was already taking measures to limit pollution produced within its own borders as well as from upwind sources within the United States, officials from the state government saw the negotiations as a way to potentially cut off another unregulated

source of pollutants flowing to the state. In a July 5, 2000 letter to US Secretary of State Madeline Albright, New York Attorney General Eliot Spitzer pointed out:

The emissions from large coal-fired power plants and other industrial sources in Eastern Canada are among the leading contributors to acid precipitation, which is causing serious environmental damage and destruction in the Adirondack Park region . . . and to other sensitive ecosystems in the Northeast (quoted in McKenna 2000, 1).

He also added that pollution from Ontario contributes to smog, damaging the health of New Yorkers. On the matter of negotiations, Spitzer said:

Absent pressure from our national government, I believe Canada may well fail to address the excessive emissions that originate in Canada. I respectfully urge you to demand that Canada promptly address its own power plants' excessive emissions (quoted in McKenna 2000, A10).

While Spitzer said that he wanted the US State Department to "pressure Canadian officials into pollution concessions at an upcoming Canada-U.S. Annex Agreement meeting," he also asked it to pursue legal action against Ontario polluters using a clause in the CAA originally intended to enable the federal government to take Midwest polluters to court on Canada's behalf (quoted in McKenna 2000, A10).

The agreement for the Ozone Annex was reached in October 2000. In it, the United States agreed to cut emissions to the extent expected under the NO_x SIP Call and new source performance standards for volatile organic compounds. Canada agreed to cut emissions to the extent already agreed to under the Canada-Wide Standard for Ozone, including the installation of the SCR reduction units by OPG (MacKinnon and Mackie 2000; Ibbitson 2000). In addition, once again, Canada agreed to tighten automobile emissions standards to the levels of US regulations (AQA 2000).

With the agreement on ground-level ozone concluded, the AQC turned its attention in the new decade to a triad of “pilot projects” (actually, studies) which commenced in 2003 and were released as reports in 2005. These examined the possibility of coordinated airshed management on the Western Canada-United States border and within the Great Lakes Area, and of creating a cross-border sulfur dioxide and nitrogen oxide cap and trade system. As of 2012, any influence they may end up exerting over air pollution governance in Canada or the United States remains an open question.

2.3. Property-based Interests and Transboundary Air Pollution

On the Canadian side of the border, the same property-based interests pressuring Ontario for more stringent sulfur dioxide rules in the late 1970s and 1980s were also calling for a bilateral treaty. Both the *Star* and the *Globe* ran editorials describing what the contents of the treaty should be and criticizing Canadian and American federal officials for not doing more to lessen the transport of sulfur dioxide to Canada. The same is true for the CCAR. This coalition of (mostly Ontario) property and environmental interests not only commented on the progress of bilateral negotiations to the press, but also tried to stir up the sympathy of the American public and lobbied the American government. The CCAR’s engagement with the American public took the form of radio advertisements played in the American market and literature on acid rain distributed to American tourists visiting the Muskoka region (M. Keating 1981d; Grange 1982; Anon. 1982; Israelson 1986; Anon. 1986b). Furthermore, the CCAR maintained an office in Washington for the duration of its existence from which its lobbyists would apply pressure to American policymakers. However, successful as these interests were in encouraging Ontario to make substantial cuts in acid-causing pollution, this success was

not repeated with respect to American actions. By 1989, it was clear that the US was acting on acid rain due to factors related to domestic politics, and the subsequent bilateral treaty merely enshrined the domestically committed reductions in a bilateral accord. It appears that, in trying to influence American environmental policy, the Canadian print media and the CCAR met the limits of their influence.

By the time of the 2000 Ozone Annex, this dynamic had changed considerably. The startup of coal plants in Ontario during the late 1990s and the decline of the Environment Ministry's budget and enforcement activities had caused Toronto's urban air quality to deteriorate, and the *Star* and the Toronto Board of Health both lobbied to have the matter addressed through tighter regulations on these sources. They did not lobby for a Canada-US bilateral accord on transboundary ozone or its precursors since the American program was already underway. Rather, any political pressure for a bilateral accord on ozone came from the American side, notably the State of New York, which was downwind of Ontario's pollution and was already involved in litigation aimed at controlling the upwind sources within the United States.

Using interviews with negotiators and an examination of documents, Debra VanNijnatten (2003, 111–112) places the beginning of the Ozone Annex in discussions among Canadian and American staff associated with these organizations. She explains that during 1996-1997, scientists and officials participating in the policy-related Subcommittee 1 of the AQC prepared the Joint Plan of Action for Addressing Air Pollution, which focused on ozone and particulate matter (see also Canada-United States Air Quality Committee 1998). In April 1998, to mark the 1-year anniversary of the Action Plan, the AQC submitted a report which reviewed its progress and discussed the

need for an annex on ozone (VanNijnatten 2003). Another year later, in early 1999, Subcommittee 1 released a report called *Ground-Level Ozone: Occurrence and Transport in Eastern North America* (Canada-United States Air Quality Committee 1999). It presented an overview of scientific knowledge of the distribution on nitrogen oxide near the border, the control efforts of Canada and the United States, and suggested that a bilateral response would be mutually beneficial. The International Air Quality Advisory Board (IAQAB; the air quality office of the IJC) also released a relevant report in 1998, the *Special Report on Transboundary Air Quality Issues*, underscoring the significance of nitrogen oxide (International Air Quality Advisory Board 1998). Therefore, even though the American states of the OTC were important in making the Ozone Annex even possible in the first place through their actions to limit nitrogen oxide, much the motivation for the Ozone Annex came not from these regions affected by ozone precursor transport, but from AQC and IAQAB officials seeking to address the problem through the mechanism available to them (bilateral commitments). As VanNijnatten (2003, 112) reports:

The technical work of both the AQC and IAQAB . . . was key in cementing the growing consensus on the nature of the Canada-U.S. ozone transport program and moving the process toward a consideration of specific policy options, especially with regard to NO_x. AQC officials, moreover, were instrumental in creating a concrete framework, via the Plan of Action and Progress Report, within which these processes could occur.

Consistent with Don Munton's (1997, 350) observation that the AQA has "become depoliticized and bureaucratized in the implementation phase," it is argued here that the AQC of the AQA is insulated from the political participation of groups with an interest in clean air policy along the Canada-United States border. As stated above, the

Canadian print media and the CCAR advocated for a bilateral treaty for many years and got it, but the subsequent development of the regime occurred without much input from the states or property-based interests along the border that would likely be interested in resorting to its use. This is not necessarily unusual—the process of negotiating an international treaty is potentially one with little involvement with the interests who would be involved in its implementation. Nevertheless, once the regime is in place, the potential for the involvement of stakeholders not only exists but, in North America, is arguably necessary for it to have any policymaking value.³⁴ Given this, what is striking about the AQA is that, despite its existence, it has not been appealed to by the property-based interests along the Canada-US border to address transboundary air pollution. New York government officials, for example, while acknowledging the problem of transboundary air pollution from Canada, addressed the matter through the US Department of State (when Spitzer sent a letter to Albright) in order to *change* the AQA and, most importantly, through litigation over the CAA as discussed in Chapter 3. It appears that no appeal was ever made to address Ontario-New York pollution through the mechanisms within the AQA. How is it that a bilateral air pollution arrangement can be ignored by the interests seeking a resolution to a transborder air pollution problem? The Connors Creek Power Plant incident is instructive in this regard.³⁵

³⁴ Since the argument of the pivotal nature of property-based interests in air pollution treaty implementation has not been discussed much (or at all) in the IR literature, there appears to be no scholarly precedent for this claim. Thus, it is unknown whether this is true in a European context.

³⁵ For another overview of the Connors Creek Power Plant incident and a fuller discussion of its relationship to the development of the Clean Air Act, see Talberg (2000).

In late March 1998, the Detroit Edison Company (Michigan's largest utility) requested permission from the Michigan Public Service Commission (MPSC), the state's utility regulator, for permission to reactivate the coal-fired Connors Creek Power Plant (CCPP) ten years after it had been shut down and partially demolished. Detroit Edison had been forced to shut down the air conditioners of over a quarter of a million customers the previous year due to energy shortages and informed the MPSC that the same thing would likely happen again were the plant not restarted (Anon. 1998a). The utility had earlier claimed that it would need two years to restart the plant, but at the March 31 filing with the MPSC, it stated that it would be online when needed by June 1, 1998. Detroit Edison also claimed that, even though refurbishing the plant would require an investment of \$11 million, it would not be necessary to install the expensive air pollution abatement technology a new power plant would need to since the CCPP had existed before the passage of the CAA of 1970 and was therefore grandfathered. It claimed to be in possession of all of the environmental permits needed to operate since the ones before the CCPP was deactivated in 1988 were still valid. The MPSC, in a bind and not wishing for more energy consumption limits, granted permission to restart the CCPP provided that the permits were indeed valid.

The public outcry on both sides of the US-Canadian border was swift and vocal. The day after the MPSC gave permission, the Windsor-based Southwest Ontario division of the Michigan-Ontario Citizens Environmental Alliance distributed an email to members titled "Connor Creek Power Plant to burn coal." In it, the division spokesman said:

The air quality in this transboundary area of Detroit and Windsor cannot [adapt?] to further stress. The health of citizens in the area cannot afford another impact. . . This

plant has been closed for ten years, 5 of its stacks were imploded last summer, that should have been the end of the Connors Creek facility (Coronado 1998).

In May, the Citizens Environmental Alliance of Southwest Ontario was joined by the Creekside Development Corporation, the Windsor & District Labour Council, the Michigan Environmental Council, the American Lung Association of Michigan, Mariner Village River Association, and the Morningside Development Corporation in formally requesting the EPA to prevent the CCPP from violating the CAA and restarting (Enviro-Mich 1998).³⁶ Sally Talberg (2000) reports that these groups also pressured Wayne County, the Governor of Michigan, and specific agency heads to look more closely into the issue. A couple of weeks later, the IJC sent a letter to US Secretary of State Madeline Albright expressing concern (International Joint Commission 1998).

In mid-June, the EPA sent a letter to Detroit Edison seeking information about the plant related to how much pollution it would produce and what the company's "intent" for the facility had been for over the previous decade. Under threat of civil or criminal action, the company was given ten days to respond. Furthermore, the EPA Region 5 Air and Radiation Division director said, "in light of concerns raised by the Canadian government and by citizens groups, I ask that Detroit Edison not restart the Connors Creek plant until the regulatory agencies have had a chance to evaluate your response to the enclosed information request" (Kee 1998; see also Schmidt 1998; Talberg 2000).

Nevertheless, Detroit Edison restarted the CCPP in early July 1998 without EPA approval. Shortly thereafter, in mid-July, the Michigan Department of Environmental

³⁶ While not a coalition in the sense that these groups shared a coordinating secretariat, a common name, or published joint reports or statements, their concerted action in responding to this air pollution threat underscores the overlap between the imperatives of property, environmentalism, and health that enable groups representing these imperatives to form issue-specific clean air coalitions.

Quality (MDEQ) and the Wayne County Air Quality Management Division (Wayne County) investigated to determine whether the plant should be considered a new source (and therefore subject to NSR) or whether Detroit Edison had only conducted routine maintenance. The departments determined that the refurbishment of the plant went beyond routine maintenance, and therefore it was required to obtain new environmental permits (presumably requiring the installation of modern abatement technology) before operating. By resuming operations before obtaining these permits, the CCPP was in violation of the CAA (Citizens Environmental Alliance 1998; Talberg 2000; Snavely 2000).

In early August 1998, Detroit Edison responded with a lawsuit against the MDEQ and Wayne County, alleging that the permit denial on the basis that the CCPP constituted a new source was illegal (Citizens Environmental Alliance 1998; Talberg 2000). One month later, in early September 1998, the EPA sued Detroit Edison, alleging violation of the CAA. Joining the EPA in the suit were Wayne County, the MDEQ, the Citizens Environment Alliance of Southwest Ontario, the American Lung Association of Michigan, the Creekside Community Development Corporation, the Michigan Environmental Council, and the Michigan United Conservation Clubs (Citizens Environmental Alliance 1998). At issue, as with the suits filed the following year against several plants in the Midwest (discussed in Chapter 3), was whether the modifications necessary to bring the plant online should be considered routine maintenance or a new source. Detroit Edison claimed that the plant had been mothballed and maintained (thus retaining its grandfathered status), while the petitioners claimed it had been scrapped and subsequently restored. A media representative of Detroit Edison claimed, "It hadn't been

used in 10 years, but it has been maintained. Our intent when we closed it was to bring it back to life at some point” (Anon. 1998b, 3). The EPA, on the other hand, determined that the plant was new, thus requiring it to install best available technology consistent with the requirements for other new sources.

The federal court reached a decision in March 1999, finding that CCPP violated the CAA. Moreover, Detroit Edison agreed to convert the plant to natural gas rather than pay for the installation of coal pollution abatement technology. In the decision, the judge spelled out the formal procedure for the conversion process:

Rather than to continue to meet this need through coal fuel, Edison has proposed to convert the Plant to a natural gas-fired facility. In order to operate the Plant with natural gas by the summer of 1999, however, Edison must begin renovation and construction now. With the consent of the parties, I have sought to facilitate the conversion solution, which all parties desire, by supervising permit negotiations between the parties' technical experts over the past month. On Monday, March 8, 1999, these experts agreed on permit conditions for a Plant using natural gas fuel (US District Court, E.D. Michigan, Southern Division 1999).

The following year, in August 2000, Detroit Edison was ordered to pay a fine of \$450,000 for its CAA violations (Snavely 2000; Snavely 2001).

As this case study shows, a confluence of interested actors participated in the policy process in addressing this air pollution problem, several of them non-governmental organizations. Whether or not these groups qualify as property-based interests or other types of citizens' or environmental groups is not of concern here. Rather, it is the statutory mechanism used that is of importance, namely, did these interests exercise influence through the AQA or the CAA?

Referring to the Connors Creek incident, Barton and Slater (2010, 31) report: “When residents of Windsor, Ontario became concerned about the prospect of pollution if an old coal-fired power plant in Detroit was allowed to reopen, the committee [the AQA’s secretariat] again provided the framework for bilateral discussion.” The framework the authors are almost certainly referring to is the formal notification procedure under Article V of the AQA, whereby each country is required to formally notify the other of each new source or modification potentially resulting in transboundary air pollution built within sixty-two miles of the border. The United States notified the AQA secretariat of the Connors Creek reactivation on March 18, 1999 (EPA 1999). The following year, in its section dedicated to assessing the utilization and success of the notification procedure, the *2000 AQA Progress Report* stated, “Ongoing consultations on the Connors Creek Detroit Power Plant were resolved to the satisfaction of all parties involved. The plant, which went back into operation in the summer of 1999, is now using natural gas instead of coal” (Canada-United States Air Quality Committee 2000, 8). However, the formal notification of the new pollution source to the AQA followed the announcement of its imminent reactivation and resulting public outcry by eleven months. It occurred six days after the federal court decision, and appears to have been part of the formal process of opening CCPP as a natural gas plant. Under “Source of Emissions” the notification reads “Natural gas fired boilers (converted from coal to natural gas firing)” (EPA 1999). Furthermore, in her analysis of the Connors Creek incident, Sally Talberg (2000, 24) notes that the Canadian government entities expressing concern over the restarting of the power plant—Canadian Ministry of Environment, the Canadian

Department of Foreign Affairs, and the City of Windsor—did so through “official letters, correspondence, and media coverage.” No mention is made of the AQA or its secretariat.

Thus, the regime and statutory mechanism through which this bilateral air pollution issue was addressed is the CAA, not the AQA. The fact that this late notification resulted in merely consultation, rather than a resolution to the bilateral issue—which was pursued through another air pollution mechanism—serves as a testament to its secondary status as an air pollution regime.

2.4. Effectiveness of the Air Quality Agreement

Returning to Young and Levy’s (1999) two criteria for international regime effectiveness laid out at the beginning of the Chapter 1, the following questions can be asked in order to assess the effectiveness of the AQA: (1) has the AQA regime solved the problems that it was designed to address; and (2) did the AQA regime alter the behaviors of actors and institutions in a way that contributes to the positive management of air pollution? The fact that the implementation of the MOI and the AQA Annex 1 do not meet these criteria is readily apparent. The MOI did not result in collaborative research to address acid rain because the Reagan Administration obstructed the process. The negotiations for what would eventually become a Canada-US bilateral treaty did not result in the treaty, rather, they were called off several times because the two countries could not find a middle ground. By the time the AQA was signed, it was the United States' domestic political processes culminating with the passage of the 1990 CAA that changed its acid rain program, not the bilateral negotiation process.

Canada's automobile emissions standards did catch up with the United States' new 1990 CAA standards, but this was part of a larger “no third automobile” effort by the

auto manufacturers to equalize tailpipe standards across North America, and thus it can not be credited to the bilateral diplomatic process. During the summer of 1989, the Northeast states had announced that they would match California's higher tailpipe standards for automobiles (Wald 1989d). However, shortly thereafter, California announced that it would tighten its standards to even more stringent levels (Matthews 1990). The threat of separate California standards created the potential for three different automobile emissions standards in the United States. Given this possibility, Congressman John Dingell of Michigan and the auto manufacturers agreed to have the minimum tailpipe standards raised to the old California level so that they would only have to manufacture two different automobiles (Hager 1989; Wald 1989c). What appeared to be an example of the AQA's effectiveness in changing Canada's behavior was likely part of this process.

Furthermore, even though the overall reductions promised under Annex 1 of the 1991 AQA did not represent stricter commitments than had already been made in the country's domestic programs, it is not clear that they have been met. Don Munton (2007) shows that United States has actually violated its year 2000 deadline to cut sulfur dioxide to about 10 million tons since its 2000 release was 11.2 million tons and still higher than 10 million for several years after that. These emissions came from utilities that were technically complying with the 1990 CAAA sulfur dioxide emissions trading plan's Phase 1 caps because early high reductions had enabled them to bank unused permits which were then used in the early to mid-2000s when actual emissions were higher. Canada, for its part, failed to comply with its Annex 1 requirement of creating the PSD-like program to protect parks and wilderness involving a regime of technological controls.

And although the country did meet its national cap of 3.2 million tons of sulfur dioxide, the cap is very generous on a per capita basis and it was less strict than the 2.3 million ton cap under the ECARP since it allowed the Western provinces to emit more than they were at the time of the agreement, rather than cut emissions (Munton 1997).

Emissions reductions after 2000 Ozone Annex, also, should not be considered an example of regime effectiveness. Total US emissions of nitrogen oxide did decrease substantially from 1980 to 2008, but the reductions are not owed to the Annex. Rather, they were caused by stricter automobile tailpipe regulations and, most importantly, policies conducted under the NO_x SIP Call, which was promoted by the OTC states. Similarly, Canadian actions to reduce nitrogen oxide emissions leading up to the Ozone Annex are the result of domestic political processes related to an increase in Ontario's use of coal power, an increase in Toronto's urban smog, and pressure from the Toronto Board of Health and the print media to address this problem. As the Ontario government was in the process of splitting Ontario Hydro into five successor companies in 1999, and allowing OPG to sell electricity on the open market, concern over a potential increase in ozone-precursor emissions, and the availability of a relatively inexpensive technology to reduce nitrogen oxide emissions, prompted OPG to install this technology at its coal-fired power plants. These resulting reductions represented much of Canada's commitments under the Ozone Annex. However, this outcome is not ideal from a health or ecological standpoint, as the Toronto Board of Health lobbied the provincial and federal governments for an environmental review of OPG with the objective of forcing it to convert these plants to cleaner-burning natural gas.

Furthermore, the AQA has not been of practical use to stakeholders seeking relief

from transboundary air pollution. A substantial amount of air pollution travels from Ontario to Vermont and the Adirondack Park in New York State, yet these states have not sought air pollution relief through the AQA. The New York State Office of the Attorney General did attempt to have its position represented in the negotiating process for the Ozone Annex, but this state office has otherwise not contributed to the regime's development similar to how it has with the CAA.

The Case of the reopening of the CCPP in Michigan is similarly instructive in terms of the AQA's limitations. Here political actors on both sides of the border in the Detroit-Windsor area opposed the decision of Detroit Edison to reopen this coal-fired plant with no abatement technology. Rather than pursue a resolution using the institutional mechanisms of the Canada-US bilateral regime, the EPA and MDEQ applied rules under the CAA to require that Detroit Edison modify the plant to lessen emissions. Only after the CCPP converted to natural gas did Detroit Edison submit a formal notification to the AQC, as required under Article V of the AQA.

In a recent assessment of the implementation of the AQA, Don Munton (2007) notes that the multiple violations of the AQA by both Canada and the United States have gone unmentioned in the AQC's biennial reports. As acid rain has declined in political salience, air pollution governance through the AQA regime has come to represent "barely disguised collusion" (*italics in original*):

The fact that regular reports under the AQA have been overwhelmingly rosy is perhaps not surprising. Both the progress reports and reviews have been done by the very same officials responsible for the implementation of the [AQA] – individuals who are thus in the enviable position of reviewing their own work. Suffice it to say, as international accords go, this is not an agreement with a great deal of transparency (Munton 2007,

183).

3. Conclusion

This chapter has sought to provide an account of the bilateral politics of acid rain between Canada and the United States using two case studies: the Trail Smelter Dispute and the Canada-United States AQA. In the Trail Smelter Dispute, farmers whose property was damaged by fumes from an upwind smelter lobbied their elected officials to resolve the problem. The fact that a border existed meant Consolidated could not legally purchase smoke easements, as it was accustomed to on the Canadian side of the border. As a result, an Arbitral Tribunal was selected by the Canadian and American governments to resolve the issue. The decision awarded the aggrieved farmers financial compensation and Consolidated agreed to implement a technological solution to prevent further heavy fumigations of sulfur dioxide. The farmers were sufficiently influential that, even when US negotiators were pleased with the initial recommendation by the IJC, they were able to exercise enough influence to reject the settlement and reopen the dispute. However, these property-based interests did not get everything they wanted, as they had asked for a control system with stricter pollution standards.

With transboundary acid rain, in contrast, the fact that a border existed along the path of the pollution was not a help but a hindrance. Ontario's print media and the CCAR successfully pressured the Canadian and Ontario governments to address acid rain but, despite trying, their influence stopped at the border. After all, New York and the other Northeastern states were already exercising pressure on Washington through bill writing and litigation, avenues of influence the Canadian government does not have access to. A decade later, however, this had reversed. As the CAA has continued to evolve through

the courts, the Northeast states have found pollution from the Midwest easier to control than pollution from Canada, to which it has little or no recourse.

The AQA case study is unique for another reason; namely, it is one of only two failed instances of air pollution governance explored in this thesis. It is not enough to show that the abatement commitments require no upfront change in behavior, as with the annexes capping sulfur dioxide and nitrogen oxides. Policy-relevant research conducted, and transboundary pollution problems successfully managed, are other potential avenues for effectiveness. However, with the case study of the CCPP, this chapter showed that the AQA has not made itself relevant to localized transborder air pollution disputes. The depoliticized and bureaucratized implementation of the regime has prevented this. The problem is, thus, *too much* cooperation resulting in a status quo and a governance vacuum which has been filled (to an extent) by the CAA.

As with the other case studies presented in this thesis, the accounts of air pollution politics on the Canada-United States border underscore the complexity of the relationship between science and environmental policy, and illustrate that scientific knowledge about the consequences of a problem does not necessarily predict a policy response aimed at addressing it. The distinction between the roles of scientific knowledge identified last chapter between Toronto in the 1950s (when the pollution was visible), and Ontario in the 1970s and 1980s (when it was not visible without science), apply here as well. As with the people of Toronto during the 1950s, the Northport farmers did not need science to tell them that their crops and trees were deleteriously affected by fumes from the nearby smelter. Their desire to stop the fumigations was expressed *prior* to their efforts to use science rhetorically in their case to the Arbitral Tribunal. Furthermore, the fact that the

“invisible injury” (i.e., dry acidic deposition) scientific argument presented on their behalf was accurate did not help their case either. Accurate scientific knowledge of the problem did not motivate political action and, once it became relevant before the Arbitral Tribunal, was not sufficient to convince it that invisible injury should serve as a basis for the operating regime.

Moreover, scientific knowledge of the causes and consequences of acid rain certainly encouraged the political actors in support of a bilateral accord with the United States on acid rain, but ultimately this effort was unsuccessful. Canada-United States negotiations broke down in 1982 and 1987, and in each instance joint scientific studies were used as stalling tactics rather than as a basis for political decisions.

This is not to argue that scientific knowledge is not important in air pollution governance—after all, an understanding of the economic risks associated with acid rain, which presupposes scientific knowledge of the extent and causes of the problem, were necessary conditions for domestic policy action in both Canada and the United States. Furthermore, science of the chemistry of ground-level ozone and the health problems it causes informed the domestic programs for nitrogen oxide in both Canada and the United States. Nevertheless, this knowledge needs to have policy relevance and credibility to be effective, and it must be used by someone with an economic interest in addressing the problem it identifies.

Chapter 6: The Multilateral Air Pollution Regime and the Emerging Issue of Trans-Pacific Air Pollution

The Convention on Long-Range Transboundary Air Pollution was created as a means of governing the flow of acid rain-causing substances between European countries. Initially signed in 1979 and expanded during the subsequent twenty years with binding protocols, the regime covers such chemicals as sulfur dioxide, nitrous oxide, persistent organic pollutants, and volatile organic compounds. Despite concerns of international economic competitiveness related to the costs of addressing transborder air pollution, it is considered a qualified success by academic observers (Dimitrov 2005; Munton et al. 1999; Wettstad 1997). Nevertheless, little has been written about the regime in terms of participation by two of its signees: the United States and Canada. This is striking when considering that LRTAP is the world's only multilateral air pollution regime, that these two countries are among the two largest polluters on a per capita basis, and that they have also created a bilateral treaty (the AQA) to which LRTAP's relationship is unclear. However, this neglect makes more sense in light of the fact that LRTAP was created to address European air pollution transport, and intercontinental air pollution was not a well-understood phenomenon at the time. Initial US involvement stems from its search for a low-politics forum with which to advance the détente process with the Soviet Union; Canada joined in order to have a multilateral forum with which to pressure the US over acid rain (see Munton et al. 1999). It begs the question: what has been the involvement of Canada and the United States in the regime? Both have committed to reductions selectively by ratifying protocols, but these are arguably reductions that would have happened anyway. Given LRTAP's apparent redundancy

with the AQA, and the fact that Canada and the United States arguably never needed to be involved in the first place (that is, from an environmental governance perspective), it would be impressive if LRTAP has had any effect at all on air pollution governance in these two countries.

Recently, however, the emerging issue of trans-Pacific air pollution has brought about renewed interest in LRTAP within the United States. As science showing the extent and consequences of pollution travelling from Asia to North America has developed, US policymakers have contributed to the development of the regime by participating in a task force aimed at producing policy-relevant research to inform decisions about how to address the issue. The Task Force on the Hemispheric Transport of Air Pollution (TF HTAP) recently released its final report, containing recommendations for the future of the regime. At the same time, US business interest groups have expressed concern over trans-Pacific air pollution. Although they are not united in their recommendations, these groups argue that this is both a present problem and an emerging issue not likely to go away until the US government does something about it.

This chapter seeks to describe American and Canadian participation in LRTAP by briefly discussing the extent of the participation into the late 1990s—until the “protocol phase” of the regime ended—and then turning to trans-Pacific air pollution. It begins by discussing the precariousness of the two countries' initial involvement in LRTAP, and then presents the trans-Pacific air pollution case study. This case study is divided into three sections, reflecting an assessment of what encompasses the three dimensions in which trans-Pacific air pollution has developed as an issue. First, the case study provides

an overview of the development of the science of the trans-Pacific air pollution transport. While many uncertainties exist about the extent and patterns of this phenomenon, the science suggests that trans-Pacific air pollution is a growing phenomenon that will increasingly affect the United States' air quality in the coming decades. Second, it discusses the policy developments directed at addressing trans-Pacific air pollution. As this chapter shows, a scientific task force co-chaired by an EPA staff member and a European civil servant within the LRTAP secretariat is working to develop a scientific basis for a multilateral policy response to intercontinental air pollution. The actions of the United States Chamber of Commerce (US Chamber) and the Alliance for American Manufacturing (AAM) in attempting to place the issue on the federal government's policy agenda and contribute to the development of that policy are discussed in the third portion of the case study. Both of these groups have lobbied the American federal government to address trans-Pacific air pollution. In fact, the policy recommendations advocated by the AAM are quite similar to those contained in the final report by the LRTAP task force. However, policy gridlock exists on the issue. This chapter argues that the gridlock is due to the fact that these industrial interests do not wish to engage in cooperative action with the EPA and the UN. As industrial groups that have historically fought against EPA action, they are not accustomed to behaving as spatially-bound interests, seeking a resolution to their problems through environmental regulation.

1. Canada and the United States' Initially Precarious Involvement

From the beginning, the European multilateral air pollution research and control effort was led by European countries for the purpose of lessening pollution between European countries. The political initiative for a multilateral treaty for air pollution came

about as a result of scientific studies conducted in the late 1960s which indicated that the increased acidity present in Sweden's natural environment was caused by air pollution from Britain and Continental Europe (Oden 1968). Sweden and Norway responded by trying to address the problem through the OECD in 1969—which took the form of a meeting organized by the OECD's Air Management Sector Group—and by raising the issue at the 1972 Stockholm Conference on the Human Environment (Levy 1995; Munton et al. 1999). LRTAP was signed in 1979 by thirty-three countries, including the United States and Canada, but the convention as of yet did not include any binding multilateral commitments (Anon. 1979b). The first of such commitments was the 1985 Sulfur Protocol, requiring thirty percent reductions in sulfur dioxide from 1980 levels by 1994. Support for it was encouraged, in part by the science conducted under LRTAP's Working Group on Effects and the European Monitoring and Evaluation Programme (EMEP). Ultimately, the protocol was signed by twenty-one countries including Canada, with the United States, the United Kingdom, and Poland staying out. Three years later, the 1988 Nitrogen Oxide Protocol followed, with twenty-seven countries committing to freeze their nitrogen oxide emissions at 1987 levels by 1995. In this instance, both the United States and Canada signed and ratified the agreement since automobile tailpipe standards already in place ensured their compliance.

Prior to the creation of LRTAP, air pollution had been addressed in North America for decades by city and state/provincial governments, and later by the US federal government through the CAA (see Chapters 3 and 4). The fact that airborne sulfur was an environmental problem was no secret. Yet, the United States did not meet any of the preconditions which might reasonably be expected for involvement in LRTAP;

namely, a geographical location in Europe, a net inflow of air pollution from another country, or an implication in the research by the EMEP (which focused on transboundary air pollution in Europe). The best way to explain the United States' involvement is by examining the costs and benefits: a signature to the convention entailed no binding commitments, yet provided a potential forum for thawing its relations with the Soviet Union. This becomes clearer when considering that when the 1985 Protocol on the Reduction of Sulfur Emissions was signed, imposing legally binding commitments and potential costs on the parties, the United States stayed out.

Canada, similarly, has little in common with the European countries in relation to air pollution except for one crucial factor: it is a net importer of air pollution from a larger industrial neighbor. In this sense the plight of Canada was similar to those of the Scandinavian countries. This by itself would suggest the need for the Canada-United States bilateral treaty that was sought by Canada at the time, but not the involvement in a multilateral treaty. The United States' and Canada's mutual participation in LRTAP was seen by Canadian negotiators as a way of enhancing their influence over the US by diluting the United States' influence in a multilateral forum and, ultimately, making the chance of achieving the sought-after Canada-US bilateral accord more likely. Thus, Canada became a party to LRTAP for reasons not directly related to the European air pollution problem. It went on to sign and ratify the 1985 Sulfur Protocol, as it had already committed itself to a regional cap of 2.3 million tons under the ECARP.

The United States created an acid rain program under the 1990 CAAA, thus enabling it to commit to sulfur dioxide reductions under the bilateral 1991 AQA. At this point, acid rain went off the national political agenda in both countries. By the early

1990s, then, LRTAP had served every (limited) purpose for Canada and the United States for which they had initially intended it. Both countries signed and ratified the 1988 Nitrogen Oxide Protocol, but only on the condition that the commitments be watered down to a mere freeze of 1987 levels by 1995. As stated above, this would not require any additional abatement measures from the United States and Canada since both had already established new automobile tailpipe standards which, in Canada, were expected to reduce nitrogen oxide emissions by forty-five percent by the year 2000 (Munton et al. 1999). Thus, Munton and colleagues (1999, 200), in a study on the effectiveness of LRTAP's first two protocols, conclude that “[t]he LRTAP convention can . . . be discounted as a direct causal agent in changing American policy.”

However, the most significant of LRTAP's protocols came a few years later. Whereas the first set of protocols generally did not require parties to adjust their national programs in order to meet the commitments, the next generation were aimed at doing so through ways that had more of an influence on the domestic policies of the parties (Levy 1995). The 1991 Volatile Organic Compounds Protocol was the first of these, as most of the LRTAP signatories did not have explicit domestic programs for this pollutant. Notably, neither the United States nor Canada ratified this protocol.

The 1994 Protocol on Further Reduction of Sulphur Emissions, with its reduction commitments based on the concept of critical loads, was even more invasive in terms domestic policy. Instead of requiring flat-rate reductions, it changed the focus to the *effects* of acid deposition. *Critical load* is formally defined as a “quantitative estimate of an exposure to one or more pollutants below which significant harmful effects on specified sensitive elements of the environment do not occur according to present

knowledge” (UNECE 2012). These were mapped throughout Europe and used as a basis for determining reduction targets—initially for sulfur and later for other pollutants. The United States stayed out of the 1994 Sulfur Protocol and, even though Canada ratified it, the country's commitments did not reflect the critical loads that served as a basis for the other countries' commitments. Rather, Canada merely agreed to abide by the same national cap of 3.2 million tons of sulfur dioxide it had already agreed to under 1991 Canada-United States AQA, and also restrict sulfur dioxide emissions in the Sulfur Oxide Management Area (a region of Eastern Canada) to 1.75 million tons (Federal/Provincial/Territorial Ministers of Energy and Environment 1998; United Nations Economic Commission for Europe 1994).

The ambitious 1999 Multi-effect “Gothenburg” Protocol continued the trend of European collective policymaking with little North American participation. With reduction targets based on critical loads for acidification, eutrophication, and ground-level ozone, it required reductions in sulfur dioxide, nitrogen oxides, ammonia, and volatile organic compounds (United Nations Economic Commission for Europe 1999). The United States eventually ratified the Gothenburg Protocol in 2004, but it did not agree to binding commitments on ammonia, and it specified its sulfur dioxide, nitrogen oxide, and volatile organic compound reduction commitments at the time of ratification so that they would reflect pre-existing domestic programs. Canada did not ratify it, opting instead to pursue bilateral commitments for these pollutants through the 2000 Ozone Annex to the AQA signed the following year.

Thus, Canada and the United States have hardly participated in Europe's air pollution regime. Neither countries' domestic air pollution programs were affected much

by the science developed under LRTAP, as neither altered their own domestic regimes to enable greater coordination to occur and, instead, have only ratified select protocols when there were no costs to doing so. This should not come as much of a surprise since, as Marc Levy (1995, 57) reports, “No one in Europe ever really considered North American emissions to be a European problem.” But as discussed below, this attitude changed during the Gothenburg Protocol negotiations, setting in motion a new phase in the regime's development.

2. Development of Trans-Pacific Air Pollution Science by the US Federal Government and LRTAP Regime

The history of the science of the global transport of airborne substances dates back to the 1800s, at which time scientists explored the effects of deserts and volcanos on the global distribution of fine particulate matter (Wilkening 2011b). By the early to mid-twentieth century, scientists were tracing the trans- and inter-continental trajectory of dust released by storms from over-farmed land (notable among these events was the American Dust Bowl of the 1930s). This was followed by the discovery and investigation of anthropogenic fine particulate matter in the Arctic—known as “Arctic haze”—during the 1970s and 1980s (Wilkening 2011a). Yet with transborder air pollution politics and science focused on acid rain and later stratospheric ozone depletion during the 1970s and 1980s, the intercontinental transport of particulate matter went off the scientific agenda and was largely forgotten.

Nevertheless, in the late 1990s, trans-Pacific air pollution was rediscovered, and it quickly became clear that a large and growing source of air pollution in the United States did not come from the United States itself, or even Canada or the other parties to LRTAP,

but from developing countries an ocean away. Daniel Jacob and colleagues (1999) published an influential paper showing that anthropogenic emissions from China would triple by 2010 (from 1985 levels) and discussing the implications on West coast ozone levels. He showed that offsetting the eventual Asian contribution to California's pollution levels would require twenty-five percent reductions in anthropogenic pollutants from California across the board. In practical terms, this meant that any additional abatement efforts which could be undertaken in California would be more than offset by pollution from Asia.

Around the same time, in 1997, Dan Jaffe and colleagues (1999) conducted studies on the Northwest coast of Washington state and discovered ozone elevated levels of ozone precursors which they calculated to have come from the eastern coasts of Asia. They showed that the specific conditions of low pressure over the Aleutian Islands and high pressure over Hawaii, when consistent for a few days, act as a conveyor belt transporting air pollution over the Pacific. In describing one particular transport event, Jaffe and colleagues (1999, 713) report:

The similarity of the Cheeka Peak [the observatory at which the observations were taken] NMHC³⁷ data on 3/39/97 with the observations off the coast of Asia add further evidence that the CPO site was sampling air that had been influenced by Asian emissions only a few days earlier. In fact the similarity of NMHC concentrations is striking and would imply that on 3/29/97 an east Asian airmass had been transported to the coast of North America with only modest losses due to dilution or chemical removal.

³⁷ Literally, non-methane hydrocarbons. These are volatile organic compounds other than methane, and are ground-level ozone precursors.

Following these early studies, many others followed which provided more evidence for trans-Pacific transport. Most of this has come from studies led by the US National Oceanic and Atmospheric Administration (NOAA). Among the findings of these studies are that air pollutants move efficiently from East Asia to the West coast of the United States with little diffusion, and that they react during transport to produce ground-level ozone and fine particles (Cooper, Forster, Parrish, Dunlea, et al. 2004; Cooper, Forster, Parrish, Trainer, et al. 2004).

Another step toward establishing a solid understanding of intercontinental transport took the form of a couple of large studies led by NOAA and the National Aeronautics and Space Administration (NASA). The first one, named INTEX – NA was conducted by scientists from the NOAA and five other countries (including Canada) working under the name, the International Consortium for Atmospheric Research on Transport and Transformation (ICARTT). This was a 2004 study on the transport of air pollution from the United States to Europe, published mostly in 2006 (Fehsenfeld et al. 2006). The second study, INTEX – B, examining the transport of pollution from Asia to the United States, was conducted in 2006 (with most publications in 2008).³⁸

The first was the most resource-intensive study of the issue that had ever occurred. To the surprise of the scientists, they discovered during the summer of 2004, for the first time, pollution from Asia over New England. This attracted the attention of the *Boston Globe*, to which several of the investigators spoke (Ebbert 2004). One study leader commented that their models had indicated that pollution could travel from Asia to the Northeast during the spring, but they did not expect it to happen during the summer

³⁸ For a list of ICARTT and INTEX – B publications, see INTEX – B's website at <http://www.espo.nasa.gov/intex-b/>.

and in such magnitude. He added that “pollution is traveling from continent to continent and there may need to be some new agreements put into place” (Ebbert 2004). Another researcher on the study commented that “right now, there's a lot of interest in the community about this influence of Asian pollution and whether it can compromise our ability to achieve regional air quality objectives.” He expressed concern that the growing pollution from Asia may eventually offset the advantages of domestic regulation, saying that, “at some point, it may be cheaper to sell pollution control equipment to China.”

One year after the INTEX-B study was conducted, during late spring and early summer 2007, the Pacific Dust Experiment (PADEX) took place. The latter was funded by the US National Science Foundation and was the most in-depth study yet of the transport of air pollutants to North America. While the two studies utilized different technology and focused on slightly different pollutants, their politically-salient message was the same: a range of air pollutants—dust, aerosols, black-carbon soot, sulfides, ozone, nitrates, and industrial fumes—cross the Pacific Ocean from China to North America, polluting the air of the West Coast and beyond. Among their findings were that eighty percent of the black-carbon soot over the United States, and twenty-five percent of the air over Los Angeles can, on certain days, be traced to China (Chea 2006; Spotts 2007). In general, the research indicated that the amount of pollution moving East across the Pacific Ocean was substantially higher than that moving Eastward across the Atlantic or from Western to Eastern Europe and Eurasia (Spotts 2007).³⁹ As one of the primary investigators in the PADEX put it, “In a very real and immediate sense, you can look at a

³⁹ For an extensive review of the recent science on trans-Pacific air pollution, see *Global Sources of Local Pollution* by the National Research Council (2009).

dust event you are breathing in China and look at this same dust as it tracks across the Pacific and reaches the United States” (Hotz 2007).

The scientific research on trans-Pacific pollution transport has continued and, in early 2010, California Nexus (CalNex) was conducted. Jointly funded by NOAA, the California Air Resources Board, and the California Energy Commission, CalNex was the most advanced examination of pollution in California yet to take place. Although many of the objectives of the research relate to improving the scientific foundation for the state's clean air policy, one of the central research questions stated in the 2010 CalNex White Paper is “What is the relative roles of regional (North American) sources and long range transport (from East Asia) on aerosol forcing over California?” (National Oceanic and Atmospheric Administration and California Air Resources Board 2008, 8). As of early 2012, the data gathered are still under review, and thus the study's findings are only beginning to be announced.

3. Policy Response to the Scientific Evidence

International environmental policy to address intercontinental transport followed the scientific developments. This process began in 1998 during the negotiations for the LRTAP Gothenburg Protocol, at which time the UK wanted to have included language that would identify the United States as a source of air pollution within Europe. The British negotiators pointed to a paper by Dick Derwent and colleagues (1998) backing up their argument, and the Norwegian negotiators similarly advocated language in the protocol accounting for intercontinental transport. Having seen the recent studies on trans-Pacific pollution, US negotiators were aware that they had a long-range transport problem too, but claimed to not know enough about either trans-Atlantic or trans-Pacific

transport to justify strong language in the protocol. Instead, as a compromise, the parties agreed to language identifying trans-continent air pollution as a research objective to be addressed within the LRTAP regime (Feb. 2011 conversation with Terry Keating; unreferenced).

The Gothenburg Protocol was signed in 1999 and, the following year, EMEP, (LRTAP's scientific research branch), met and formally adopted intercontinental air pollution as a research objective. Also in 2000, diplomats from Sweden organized the Workshop on Needs for Future Revisions of Protocols and Strategies on Transboundary Air Pollution, held in Saltsjobaden, Sweden. Bringing together the LRTAP negotiators (and featuring a breakout session on the topic of intercontinental transport), its purpose was the review the direction of air quality policy in Europe. At the time, a consensus developed that they were coming into a new phase for the convention—one that would somehow address intercontinental air pollution. An understanding was reached to wait for the Gothenburg Protocol to come into force and then decide on the next step (Feb. 2011 conversation with Terry Keating; unreferenced).

Around the same time, a series of meetings and conferences aimed at promoting the policy-relevant scientific research on trans-Pacific pollution occurred. In an early one, over 100 climate experts assembled in Seattle during July 2000 for the First International Conference on Trans-Pacific Transport of Atmospheric Contaminants, a conference organized jointly by the EPA and the Nautilus Institute on the topic of trans-Pacific air pollution (Wilkening, Barrie, and Engle 2000). The EPA also organized a meeting in New York City during June 2001 on intercontinental transport, and another in Bad Breisig, Germany during October 2002 (T. Keating 2011). By then, the Saltsjobaden

workshop had become a regular event (under the name, the Intercontinental Transport and Climate Effects of Air Pollutants Workshop) and, at the October 2004 gathering in North Carolina, the idea to create a task force on hemispheric air pollution within the LTRAP regime gained popularity. The issue was voted on at a LRTAP workshop in Gothenburg the same month, and the Task Force on Hemispheric Transport of Air Pollution (TF HTAP) was created in December 2004 with the objective of generating scientific knowledge of the transport of air pollution across the Northern Hemisphere. This working group seeks to bridge scientific research on air pollution with policymaking by generating and addressing policy-relevant research questions and publishing their findings in assessment reports (TF HTAP 2012). These reports thus frame the scientific knowledge on intercontinental air pollution transport that the LRTAP member states are able to make decisions from, including decisions about the implementation of domestic programs or the need for or the design of additional protocols. The TF HTAP is chaired by two scientists, one from the United States and one from Europe.

The TF HTAP has conducted annual planning meetings and occasional scientific workshops aimed at informing scientists studying the long-range transport of air pollution about its research and making progress toward its scientific assessment reports, originally planned for release in 2007 and 2010. These reports state the findings of experiments conducted by the TF HTAP, review the existing state of knowledge about hemispheric transport, highlight needed areas for additional research, and offer policy recommendations to LRTAP parties. Both are edited by the two co-chairs of the TF HTAP. The HTAP 2007 report is an interim report on the ongoing scientific analysis of the transport of ozone and particulate matter, released in anticipation of the final report.

The HTAP 2010 report (actually released in August 2011) is more exhaustive and complete, also covering persistent organic pollutants (POPs) and mercury, and consisting of five volumes (three on technical scientific evidence, an executive summary, and a summary for policymakers).

The scientific content of the reports does not feature much new data that are not published in peer-reviewed journals by scientists studying inter-continental transport. Rather, they are largely summaries of the existing state of knowledge regarding the various chemicals that travel across and between the continents. What renders them politically significant is that they are aimed at informing policymakers of what is known, and point out to scientists which knowledge would be helpful in terms of policy. While scientists consult a range of sources when deciding what to study, some consulted HTAP 2007 for this purpose (Feb. 2011 conversation with Robert Talbot; unreferenced).

With the goal of providing policy-relevant information, the TF HTAP employs the concept of “Relative Annual Intercontinental Response” (RAIR), which it describes as “a measure of how much benefit a region may receive from emission reductions in other regions when emission reductions are coordinated on an intercontinental scale” (Task Force on Hemispheric Transport of Air Pollution 2011a, 269). In a specific region, as the regional release of pollutants goes down (perhaps due to existing regulations) and the importation goes up, RAIR increases. It is an example of a policy-directed and -relevant scientific concept—its design is to identify the need for emission controls that are intercontinental in scope.

Among the findings of HTAP 2010 are those related to the disproportionate growth in emissions on the two sides of the North Pacific. Using global emissions scenarios created for the next Intergovernmental Panel on Climate Change assessment, the HTAP 2010 report estimated the reductions in particulate matter (PM) and ground-level ozone (O₃) that will occur over the next several decades. It states:

the regional distribution of emissions in the Northern Hemisphere is expected to shift, with steeper and earlier declines in Europe and North America and shallower declines or actual increases in South and East Asia. Under the lowest emissions scenario, NO_x emissions between 2000 and 2050 decline by 78%, 63%, and 48% in North America, Europe, and East Asia, respectively, but increase in South Asia by 42%. Under the highest emissions scenario, NO_x emissions peak in 2030 with decreases of 43% and 16% in North America and Europe respectively, and increases of 65% and 91% in East Asia and South Asia, respectively (Task Force on Hemispheric Transport of Air Pollution 2011b, 27).

This has substantial implications for American and Canadian air pollution policy: “For North America ground-level O₃ concentrations, the RAIR is estimated to increase to around 50% . . . suggesting that, in the future, changes in emissions of O₃ precursors outside the region may be as important as changes within the region” (Task Force on Hemispheric Transport of Air Pollution 2011b, 23). When discussing the implications of ozone transport, the report further states that “As public health-based air quality standards continue to be tightened based on new health effects research, the contribution of intercontinental transport to concentrations that exceed such standards will continue to increase” (Task Force on Hemispheric Transport of Air Pollution 2011b, 27).

In addition to modeling the extent of the inter-continental transport of various pollutants, the report also discusses the effects on human health and natural ecosystems.

Some highlights include the assertion that the intercontinental transport of air pollution contributes between 20% to greater than 50% of the ozone-related mortalities in the receptor region, and that sometimes the health impacts in the receptor region are greater than in the region creating the ozone and ozone precursors in the first place (Task Force on Hemispheric Transport of Air Pollution 2011b, 23). The report also says that the extent of ozone-related crop damage (costing tens of billions of dollars every year) is a “food security” issue; “intercontinental transport [of O₃] may be responsible for about 5% to 35% of the estimated crop yield losses depending on the location, crop, and response function used” (Task Force on Hemispheric Transport of Air Pollution 2011b, 23). Also discussed are the climate risks associated with trans-Pacific black carbon; and the problem of lead deposition in aquatic ecosystems, thus posing health risks related to fish consumption.

Another of the most important findings of the report regards methane (Feb. 2011 conversation with Terry Keating; unreferenced). A potent GHG, methane also contributes to photochemical smog (which itself contributes to climate forcing). Most significantly, its long lifetime of nearly ten years means that smog is an emerging global (not merely urban) air pollution problem, which cannot be addressed locally and which exists to an extent irrespective of local emissions. The report states that “Roughly 40% of the O₃ increase since the preindustrial period is believed to be due to anthropogenic CH₄ [methane],” and that the future scenarios predict that O₃ from methane will offset regional and local abatement efforts in some instances (Task Force on Hemispheric Transport of Air Pollution 2011b, 28). This is especially problematic for California,

which could see methane offset its attempts to combat smog with regional solutions, such as stricter emissions standards on automobiles and a variety of commercial practices.

Thus, the HTAP 2010 identifies intercontinental and trans-Pacific air pollution as an emerging problem for North America, one with substantial environmental and health-related consequences. The concluding portion of the report uses these findings as a basis for political prescriptions, arguing that “further international cooperation to mitigate intercontinental flows of air pollution” are necessary, otherwise “many nations will not be able to meet their own goals and objectives for protecting public health and environmental quality over the next 20 to 40 years” (Task Force on Hemispheric Transport of Air Pollution 2011b, 41). The authors point out that air pollution abatement is mutually beneficial for source and downwind countries, and that among the benefits to downwind countries is that less pollution importation reduces the costs of pollution control necessary to meet policy goals (including the mandated ambient air quality standards under the CAA).

Since the four classes of pollutants addressed by HTAP 2010 are dealt with differently through multilateral political arrangements, the authors separate them in terms of what further political action they prescribe. POPs are being addressed with the global 2001 Stockholm Convention and negotiations have been underway since 2009 for a global treaty on mercury. Thus, these pollutants have made the leap from being addressed regionally to globally and no new political arrangements need to be made outside of the processes presently underway. But for PM and O₃, only LRTAP and a few less-developed regional initiatives exist. If air pollution travels not only within these regions, but between them, what can be done politically to address it?

The finding about methane has left the TF HTAP and LRTAP at a turning point: should LRTAP address this global pollutant through the regional air pollution regime, or hand it to existing political arrangements aimed at reducing GHGs (in particular, the international climate change regime) (Feb. 2011 conversation with Terry Keating; unreferenced)? If this happened, it would arguably blur the lines between two issues—air pollution and climate change—which have so far been addressed separately. Yet the maturing science on the long-range transport of air pollution is developing an account of the phenomenon which may point to the need for a different way to conceptualize these problems, namely, that smog and climate change are two sides of the same coin, distinguishable by being two manifestations of (mostly) the same pollutants.

The possibility of addressing methane through the international climate change regime is part of a larger issue, namely, how can East Asian (and, to a lesser extent, African) polluters be addressed politically? And this is part of an even larger issue of how the United States will engage China, a rising superpower and economic partner. Since 1998, China has participated (along with Japan, Russia, and nine other East Asian nations) in the Acid Deposition Monitoring Network in East Asia (EANET). The fact that this region appears to be developing its own air pollution regime centered on the priorities of its members indicates a motivation to address the issue, but on the terms of the EANET's members. Similarly, the Malé Declaration on Control and Prevention of Air Pollution and its Likely Transboundary Effects for South Asia has existed since 1998 and has eight parties; and Africa and South America have also begun to develop regional cooperative programs.

In light of this reality, there are several policy options for the development of LRTAP which have been discussed for the better part of the 2000s (Brachtl 2005; Holloway, Fiore, and Hastings 2003). These include: (1) expanding LRTAP to parties not presently members and binding them to existing protocols; (2) developing cooperative programs (potentially instituted by the United Nations Economic Commission for Europe [UNECE]) to share abatement technology with countries upwind of LRTAP members; (3) negotiating a new global agreement for PM and O₃; (4) addressing PM and O₃ through an existing global air-related regime; and (5) establishing a global oversight framework under which LRTAP, EANET, and other regional arrangements would fall.

The policy option that presently has the most support is the latter one. In their September 2010 newsletter, the influential and quasi-governmental Global Atmospheric Pollution Forum (GAP Forum) argued that this is the most realistic possibility, and that an associated “global framework agreement” could address “monitoring, reporting, access to information, and co-operation on research” (Global Atmospheric Pollution Forum 2010). More importantly, HTAP 2010 endorsed this approach. The report says that such an approach would be mutually beneficial since, on the one hand, LRTAP could support the developing regions with a host of scientific knowledge about modeling and monitoring, as well as the abatement technology itself and enforcement techniques; on the other hand, the developing regions “could provide better information about the sources, character, and flow of pollutants originating in or affecting their regions” (Task Force on Hemispheric Transport of Air Pollution 2011b, 42). What HTAP 2010 calls a “global federation” could facilitate connections between other air-related regimes such as

those for climate change, stratospheric ozone depletion, POPs, and the potential regime on mercury, while also formally linking the various regional arrangements. One possibility for the organization of the global federation would be to give the United Nations Environment Programme (UNEP) the oversight role—LRTAP could be moved from the UNECE secretariat to UNEP or the World Meteorological Organization (WMO), which would also oversee the others. The authors feel that, overall, a global federation would enable each region to make advances in finding solutions to air pollution problems while enabling them to maintain the “autonomy and flexibility for regions to develop policies and programs appropriate for their circumstances” (Task Force on Hemispheric Transport of Air Pollution 2011b, 42).

More than simply stating that a multi-region regime is a worthwhile goal, the TF HTAP has taken concrete measures in developing relationships with the other arrangements. The forms this has taken have been the involvement of experts from non-LRTAP countries in the TF HTAP's meetings; the exchange of scientific information with EANET, including a joint workshop with its Science Advisory Committee; and the TF HTAP claims to have “reached out to the Malé Declaration” (Task Force on Hemispheric Transport of Air Pollution 2010, 6–33). These efforts are part of a larger objective by the LRTAP members and its leaders to expand the global air pollution regime so that LRTAP's objectives can be met. It is both *based* on a developing but robust scientific consensus about long-range transport of air pollution, and *contributing* to the development of this science for political ends. However, the views of international negotiators and climate scientists may not be sufficient to encourage the United States to push for substantial concessions by upwind polluters. In the following section, I explore

the way in which businesses interests have responded to the science of inter-continental transport and the extent to which they have lobbied the American government to address it.

4. Response of Politicians and Business to Intercontinental Air Pollution

The beginning of intercontinental and trans-Pacific air pollution as a political issue occurred in Walker County, Georgia, which is a rural suburb of Chattanooga, Tennessee, a city whose economy is heavily based on manufacturing. By early 2005, Chattanooga had been declared a non-attainment area under the CAA's 1997 fine particulates (PM_{2.5}) standard, thus discouraging investment into the region (EPA 2011). As local leaders were hoping to lure a Volkswagen manufacturing plant to the city, they engaged with the EPA over possible measures which could be taken in order to achieve sufficiently clean air to have this designation removed. The concern expressed by both the EPA and Chattanooga leaders was that much of the city's pollution was drifting in from Walker County. Regional wildfires, intentional brush burning, and Walker County's manufacturing-heavy economy ostensibly produced a substantial amount of pollution and, indeed, Walker County was itself in non-attainment for the 1997 PM_{2.5} standard (Beavers 2004a; Beavers 2004b; Edgemon 2004; Anon. 2005a).

Attempting to cooperate, Walker County banned brush burning during the summer months. Yet this did little to help, as the days in which Walker County had the highest amount of particulates were the same as for other counties, and thus it appeared that much of the offending pollution was drifting in from other regions (Frick 2005a; Frick 2005b; Beavers 2005). Walker County Commissioner Bebe Heiskell responded by hiring an environmental consultant, Craig Smith of Smith-Albridge Inc., to talk to NOAA

and NASA to find out where the pollution was coming from and what the magnitude of the problem was (Anon. 2005b; Franks 2006).

The consultant produced a report indicating that pollution was coming to Walker County from wider than the region and, indeed, from other continents. He also said that NOAA and NASA did not cross-reference info with the EPA, so there was no accounting for foreign emissions in the determination of CAA compliance. Heiskell, realizing that shutting down all of the cars in the county would not solve Walker County's air pollution problem, contacted the EPA to ask what to do and, as well, spoke to the press. EPA Administrator Stephen Johnson reportedly offered no solutions, but newspaper articles in the *Chattanooga Times Free Press* and *Walker County Messenger* caught the attention of the US Chamber, who in turn asked her to testify to the Senate over the EPA's proposed revised NAAQS standard for fine particulate matter (Anon. 2006).

On July 13, 2006, Commissioner Heiskell testified before the US Senate in response to the EPA's proposed PM_{2.5} standard revision. During her comments, she claimed that Walker County's non-attainment status under the CAA was “almost entirely due to outside influences” of foreign particulate matter. She also discussed the economic implications resulting from the county's non-attainment designation:

I see the job losses that stem from perpetual non- attainment. This adds to the complexity of local governance while we struggle with public opposition to these non-attainment designations and many of our jobs go overseas. From an economic development standpoint, being in non-attainment of EPA’s fine particulate matter standards has serious consequences right now. Many industries begin a site location search using EPA’s internet list of counties in non-attainment. Those counties never make the list of prospective sites (Heiskell 2006).

She went on to explain that many potential businesses had decided against locating in Walker County out of uncertainty of future air pollution abatement costs, and asked Congress to reconsider tightening the fine particulate matter standards.⁴⁰

Although Walker County's claims of the foreign contribution to their local pollution is likely overstated, since Commissioner Heiskell brought the issue to the attention of US business groups, both the US Chamber and the AAM have lobbied the US government and released reports about the problem. Commissioner Heiskell's testimony is but one expression of the economic concern among American businesses over intercontinental air pollution. During the second half of the 2000s, the United States' most powerful labor and business interests pressed for efforts to address the implications of air pollution from Asia (China and, to a lesser extent, India and others). The arguments of one of these groups centered on the unfair cost advantage enjoyed by Chinese industry, while the other discussed the means by which American laws should account for foreign pollution when determining compliance. Yet both of them highlighted the costs of the pollution to health and the environment, particularly sulfur dioxide, particulate matter, and carbon dioxide.

The US Chamber was the first national businesses interest group to mention trans-Pacific air pollution and its implications for CAA compliance. In April 2006, it sent a letter to the EPA lobbying against the proposed NAAQS revision for fine particulates PM_{2.5} on the basis that Chinese dust storms account for much of the pollution in parts of the United States, and that such a revision would make it even more difficult for these areas to comply (Kovacs 2006). Later, observing that "the impact of foreign emissions

⁴⁰ The standards were subsequently made more stringent (Eilperin 2006).

poses problems for business and industry stakeholders in localities affected by such emissions,” yet “EPA has stated it has no position about how to address the problem,” the US Chamber took its effort to address the issue a step further by proposing a regulatory program to the EPA (Kovacs 2007). In December 2006, the US Chamber petitioned the EPA to “implement section 179B of the Clean Air Act and develop a comprehensive regulatory program that fully addresses the influence of foreign emissions emanating from outside the United States on domestic air quality and air quality compliance” (U.S. Chamber of Commerce 2006). Specifically, the US Chamber requested that the EPA share data with states so that they could account for foreign air pollution in the creation of the SIPs required from each state. The measures that states would propose in pursuance of NAAQS compliance would presumably target modified NAAQS, with higher allowed pollution limits accounting for the amount of foreign pollution present. The head of the US Chamber’s Environmental, Technology, and Regulatory Affairs Division said: “As economies in China and India continue to grow, so will emissions resulting from this economic growth. Governments and businesses seeking to comply in good faith with clean air rules shouldn't be penalized because emissions migrate from overseas” (U.S. Chamber of Commerce 2006).

Another mention of trans-Pacific air pollution by a US business interest was made in March 2009, at a time when US industry was already concerned with a record-size trade deficit with China and what it considered to be unfair currency manipulation by the country. The AAM, arguably among the US’s most powerful manufacturing lobby groups, released a report about the costs of China's lax environmental standards which it argued were making the American steel industry less competitive. This report was

endorsed by another interest group, the AFL-CIO, which reported its findings on the organization's website (Parks 2009). The report found that China's laws for air and water pollution are weak and hardly enforced, that its steel industry spends little on abatement technology, and it also highlighted the environmental problems for the United States caused by this. It discounted the argument that China's practices are comparable to the United States' while it was industrializing: "Environmental technology that is in widespread use today has made the human and environmental impacts of industrial pollution both quantifiable and controllable" (AAM 2009, x). The report concluded by stating that US industry, scientists, engineers, and the US government should help China adopt existing and new abatement technologies.

During the press conference held for the release of the report, Leo Gerard, president of the United Steelworkers (which is a member of the AAM), commented that China's weak enforcement of environmental laws was both hurting the environment and damaging the American steel industry's competitiveness. He continued, "This report should be used as a guide for China and the U.S. to make Chinese pollution standards and enforcement efforts more consistent with programs in other steel-producing countries" (Parks 2009). In the same press conference, Paul Scott, executive director of the AAM, commented that China is "spreading pollution around the world and contributing to global warming" in addition to creating an unfair competitive advantage for itself (Parks 2009).

Thus, while the US Chamber frames the issue of trans-Pacific air pollution as one in which regulation-violating localities are disadvantaged competitively within the United States, the AAM frames it as one in which a US-wide industry is placed at a competitive

disadvantage relative to upwind polluters. In the case of the former, the proposal is to regulate air pollution less stringently, yet with the latter the proposal is for more regulation (albeit overseas). In either instance, the problem for American businesses is that it is spatially bound. Being on the receiving end of the source-receptor relationship has made the locality—whether an air quality region under the CAA or industry within the nation as a whole—less amenable to economic development and growth.

Although the efforts of the TF HTAP are occurring at the same time as the US Chamber and the AAM, it is not clear that they are in any way coordinated or mutually reinforcing. This is not surprising given that the TF HTAP is co-chaired by a member of the EPA, an organization which the US Chamber contends is arrogant and does not take “foreign emissions” seriously. When asked about the HTAP 2010 recommendation of forming a global federation to oversee the various regional air pollution governance arrangements, an executive at the US Chamber said, “that's crap” (Mar. 2011 conversation with William Kovacs; unreferenced). He added that trying to address the matter through the UN in any way, such as by placing the confederation under UNEP, is “foolhardy” and “bubble gum” solution. Rather, foreign emissions is an issue of international competitiveness and should potentially be addressed through the World Trade Organization. Yet there appears to be more common ground between the AAM and the TF HTAP. Specifically, both propose the sharing of abatement technology with China, a recommendation which could be possibly be facilitated through the global federation suggested by the TF HTAP.

In Canada, however, it is less clear that trans-Pacific air pollution will be viewed as a problem. Canada does not have mandatory ambient air quality standards nationally,

nor are there regulatory mechanisms enforced by the federal government. Without these, there are no federally-imposed economic costs for trans-Pacific air pollution. And while it is possible that business interests will be concerned about the quality of the air in Vancouver, it appears less likely that place-based industry in Canada will express displeasure over the competitive disadvantage it has compared to Chinese industry. This is the case because Chinese steel companies have substantial British Columbian (BC) holdings in mines producing the raw materials needed to produce steel.

BC's most important commodity for export is coking coal, which is used to make steel. From 2007 to 2010, the value of BC coal exports to China increased from \$13 million to \$804 million. In 2011, a consortium of Chinese companies, including the Shougang Group (one of its largest steel makers), invested \$1 billion in BC mines, and the main project is expected to produce two million tones of metallurgical coal per year, necessary for steel production (Ebner 2011). Given this reality, it appears unlikely that trans-Pacific air pollution will be much of an issue between Canada and China unless the property-based interests (and more specifically, real estate interests) in Vancouver decide that something should be done about it.

5. Conclusion

This chapter provides an account of the United States' (and, to a lesser extent, Canada's) involvement in the LRTAP, the multilateral air pollution regime. Throughout the 1980s and 1990s, their participation was minimal; it was, after all, a European treaty. However, beginning in the late 1990s, trans-Pacific air pollution has emerged as a salient political issue as the following processes have unfolded: the intercontinental flows of air pollution have increased; climate science indicating the extent, causes, and consequences

of these flows has become widely accepted; place-based economic interests have recognized the damage done to their operations as a result of this pollution, and have expressed this concern to the US government; and ambient air pollution standards have become stricter in the United States. As long as these processes continue, it is possible that we will see heightened political efforts to address the matter. If nothing else, it has caused the US government to exhibit renewed interest in LRTAP.

While it is unclear what will occur internationally to address the long-range transport of air pollution, the creation of a global federation is one alternative that has the potential to occur. In an exploration of the possibility of such an arrangement, Megan Brachtl (2005) points out that this option would have the advantage of citing LRTAP as a model while being flexible to the circumstances of particular regions and facilitating the transfer of technology. However, US businesses interests, whose support a substantive political effort arguably needs, are skeptical of the UN, EPA, and environmental regimes in general. In order for trans-Pacific air pollution to be addressed politically, US business lobbies and the US federal government will need to agree not only on what the policy outcome will be but—to start with—what the appropriate multilateral forum is. The fact that the US Chamber considers the government entities conducting the American policy response (the TF HTAP, with UN and EPA participation) to be arrogant and inappropriate for the task suggests a lack of willingness among the parties to cooperate. Without an agreement as to the rules of the game, the status quo prevails.

Chapter 7: Conclusion

This dissertation has explored the role of property-based interests groups in air pollution governance in Canada and the United States. On the basis of a comparative-historical analysis of four regimes of domestic, bilateral, and multilateral air pollution governance, this dissertation argues that that property-based economic interests provide much of the political will to address air pollution by lobbying for and developing clean air policy. As a classification of business interest groups implicated in environmental governance, they are analytically distinct from industrial groups. Property-based groups and businesses, while at times contributing to pollution by seeking to encourage economic growth and rising land values, suffer from the negative externalities disproportionately. Thus the cost of lobbying for air pollution relief and adapting local infrastructure to reduce pollution is money well spent. For industrial businesses, however, a cost-benefit calculation of clean air policy tends to suggest different actions. As the market for their products is wider than the region in which the products (and pollution) are produced, industry tends to be concerned with keeping production costs low and maintaining the prosperity of the broader (non-local) economy. Given these diverging objectives, policy outcomes tend to be compromises between the goals of property and industry. Property politicizes air pollution and promotes its own solutions, but industry is influential in shaping the resulting programs, even if it would have preferred to avoid all regulation in the first place. This research project suggests this to be a persistent feature of North American air pollution governance over space and time.

Yet this elite pluralistic dynamic between property and industry does not happen in all settings. Sometimes, lacking an existing statutory framework through which to

pursue air pollution relief, property finds it has little influence. This was found to be the case in Canada's attempts to convince the United States to initiate an acid rain program. In other instances, a framework exists, but its implementation rules out its utility in property-industry disputes. Here too much inter-agency or inter-governmental cooperation is a problem as it entails the bureaucratization of air pollution governance and its insulation from politics. At times a very different condition brings about the similar status quo in which substantive air pollution governance does not occur, namely a lack of cooperation between businesses seeking a regulatory solution to air pollution and the government agencies whose task it is to provide it.

These processes were illustrated in the case studies. The chapter on domestic air pollution governance in the United States shows that a bottom-up process has unfolded, whereby property-based interests and the states that represent them have not only tried to clean up air pollution by regulating local sources, but also stationary sources in other states or the manufacturers of mobile sources with headquarters in other states. Faced with a serious smog problem in Los Angeles, California was the source of air pollution science during the 1950s identifying chemicals from automobiles as the culprits in photochemical smog, and the political will to require automobile manufacturers to modify their products to produce less pollution. A wide range of property-based economic interests, notably the *Los Angeles Times* and the Chandler family who owned it, encouraged the state's political efforts by pressuring the state government and generating policy solutions. The ability of state governments to influence national policy was arguably enhanced with the passage of and subsequent amendments to the CAA. When acid rain threatened the Adirondack Park in Upstate New York, the state

government not only took aggressive control measures within its borders, but also forced changes to the national air pollution regime. It did this by using an opportunity, during the negotiations over the 1990 CAAA, to tighten automobile tailpipe standards, and by suing the EPA over CAA rulemaking. Furthermore, with the 1984 Acid Deposition Control Act, New York served as the testing ground for the sulfur dioxide trading program under the 1990 CAAA. The most influential interest group encouraging New York to serve this activist role as the Adirondack Council. At times partnering with other property interests such as shoreowner's associations and tourism operators, this organization helped formulate the 1984 statute, wrote articles in the *New York Times*, produced reports circulated among federal lawmakers, served on the EPA's Acid Rain Advisory Committee, and joined the state government in litigation, among other activities (Randorf 1998).

The chapter on domestic air pollution governance in Canada illustrates that while the Canadian response to air pollution has not evolved to be as linked through federal legislation as the United States', it has still been led by property-based interests and has, at times, exhibited a bottom-up character. In Toronto during the 1950s, the city lacked the jurisdictional authority to regulate some of the sources contributing the most to the city's urban smog problem. Nevertheless, Ontario passed a statute in 1958 granting this authority to the municipalities, allowing them to regulate transportation sources, even though it had been within federal jurisdiction. Here an elite policy planning group, the Metropolitan Toronto Civic Conference, were decisive in disseminating information on the costs of pollution, developing policy, and pressuring the municipal and provincial governments. It was aided by another category of urban property-based economic

interests, namely, the city's two largest-circulation newspapers, the *Star* and the *Globe*. Decades later, as airborne chemicals were discovered to cause damage to forest and aquatic ecosystems, Ontario's property-based interests provided the political will to regulate the province's heavily polluting industries. The Canadian Coalition on Acid Rain negotiated with industry, organized events with invited speakers, wrote newspaper articles and stayed in close contact with the print media, and lobbied the public with radio and television advertisements. As with Toronto's urban smog problem, the city's newspapers adopted the editorial position that the Ontario government should act aggressively on acid rain, and used their platform to lobby for it. Given Ontario's prominence in Canada at the time, both economically and as a polluter, its Countdown Acid Rain program represented a substantial portion of the Eastern Canada Acid Rain Program of 1985.

Property-based interest groups have also been able to influence regulatory regimes in the other country, although the presence of a national border presents a complicating factor. Chapter 4 began with an examination of the Trail Smelter Dispute between farmers in Northport, Washington, and a smelter across the border in Trail, British Columbia. Suffering from the effects of sulfur fumes, the farmers organized and lobbied their government representatives for pollution relief. The US State Department got involved, and the IJC was used to hear the cases and recommend a settlement. Although the US government wanted to accept the settlement, the farmers were unsatisfied and were able to convince the federal officials to reject it and move the resolution of the dispute to another forum. The eventual result was a preferable settlement for the farmers because it required that the smelter limit the pollution emitted

and travelling to Northport. However, in the late 1970s and 1980s, when transborder air pollution appeared as an issue between Canada and the United States, property-based interests in Canada did not have the same degree of influence they had exercised in convincing the Ontario government to regulate its heaviest stationary polluters. The same groups—the CCAR and the *Star* and *Globe*—lobbied the Canadian government to convince the United States to adopt an acid rain program; the CCAR even lobbied US officials directly. Yet when the United States eventually created an acid rain program, it was due to an array of reasons related to domestic politics; among them, the competing business strategies of high- and low-sulfur coal producers and the federal politicians representing them, as well as concern over acid rain in the Adirondacks. For evidence of the latter, one need look no further than the fact that the acid rain control program under the 1990 CAAA was modeled after New York's program aimed at addressing acid rain in the Adirondack Park. There are at least two ways of interpreting the United States' apparent lack of responsiveness to Canada's acid rain concerns. One is that the property-based interests of Ontario and the Canadian government simply have a limited amount of influence over the US government. Without access to the American court system or elected representatives, there is little reason for Canada to have the same degree of influence as New York or other states. Yet a second possibility is that action on acid rain was over-determined. Although this is unknowable because it necessitates counterfactual reasoning (i.e., what would have happened had New York not pressured Washington for acid rain policy?), the fact remains that the United States *did* take action, and the CCAR was one of the voices calling for it.

After the AQA was signed, the CCAR disbanded and acid rain ceased to be a politically salient issue in Canada. Its implementation process of this regime can be aptly characterized as depoliticized—“collusion,” in Don Munton’s (2007) words. It was not appealed to as an instrument for addressing a pressing transborder air pollution dispute on the border’s most polluted area (the Connors Creek power plant dispute), and its biennial reports have overstated its influence while downplaying treaty violations on both sides. Similarly, in a February 2012 conversation with the communications director at the Adirondack Council, I was told that, even though the Adirondacks receive air pollution from Canada, no communications exist between this group and anybody in Canada over the issue. Too much governmental cooperation on the issue of air pollution on the Canada United States border—similar to what Plato termed, “justice among thieves”—has resulted in a status quo in which political efforts to address air pollution transport are channeled exclusively through domestic regimes.

The involvement of the United States and Canada in the multilateral air pollution regime, LRTAP, also represents a governance vacuum, yet for different reasons. It is only thanks to modern air pollution transport science that the multilateral air pollution regime is of importance to the United States and, possibly, Canada. After all, LRTAP is a European regime aimed at addressing air pollution transport within Europe. Scientific knowledge of an otherwise invisible threat, coupled with preexisting concerns by US industry over domestic regulation and foreign competition, have led to trans-Pacific air pollution becoming an emergent political issue. It is presently being addressed through LRTAP’s TF HTAP, which is attempting to create a scientific foundation for future regulatory action and intergovernmental cooperation. The recommendations of the TF

HTAP, in its most recent report, are consistent with what the Global Atmospheric Pollution Forum has called for in its newsletter, and very similar to the policy prescription offered by the AAM. Yet American industrial interests are seemingly distrustful of both the United Nations, which would oversee the global federation recommended by the TF HTAP, and the EPA, with which the American TF HTAP co-chair is professionally affiliated and whose rules they regularly challenge in the courts. It is likely that these industrial interests are unaccustomed to acting as property-based, spatially-bound interests, even though they are concerned about pollution as the receptor in a source-receptor relationship. After all, this would require them to act as “property” with respect to intercontinental air pollution while continuing to challenge domestic regulation. Unlike other property-based interests, they have not developed a cooperative relationship with the EPA; indeed, it appears that the gulf is characterized by a divergence in views over the appropriate role of government and the question of which multilateral forum to even begin to pursue a response through. Thus, unlike the present Canada-US bilateral regime, which represents a governance vacuum due to collusion and depoliticization, the status quo here is caused by gridlock and a lack of cooperation.

1. Comparisons Across Case Studies

Comparing the role of property-based interests in these case studies yields interesting insights about their role in air pollution governance in general, and how this varies across time and space. As Table 1 illustrates, a considerable amount of variation exists among the actors in the case studies on some relatively key dimensions. First, mechanisms enabling property-based interests to have influence—elite access, institutional frameworks allowing for litigation, and the research distributed by the group.

In all of the case studies, the actors had access to policymakers who, in most instances, responded with a policy outcome of some sort. The only example of an organization whose lobbying did not result in a policy outcome similar to what it advocated in favor of was, ironically, the powerful industrial group, the U.S. Chamber of Commerce. As suggested elsewhere, the acrimonious relationship between this group and the EPA is likely preventing a dialogue toward the development of a mutually acceptable policy response.

Table 1: Comparisons Across Case Studies with respect to Property-Based Interests

Case study	Actors representing the interests of property (among a range of other socially constructed imperatives)	Mechanisms of influence	Economic elites among those represented?	Coalition of other organizations?	"Environmental" group(s)	Policy outcome
Los Angeles/California, Smog, 1940s - 1970	Times, Los Angeles Chamber of Commerce, SOS, Air Pollution Foundation, Los Angeles Citizens Smog Committee	elite access, scientific research	Yes	Los Angeles Citizens Smog Committee	None	Stricter regulation of point sources and mandated control technology on mobile sources
New York, Acid Rain, 1980s and 1990s	AC, EPL	elite access, scientific research	Yes	EPL	AC, EPL	1984 acid rain statute control program and subsequent rules on tradable allowance controls
New York NSR and GHG Litigation, 1999 - 2007	AC, Common Ground Alliance	elite access, federal statute to appeal to, institutional context enabling litigation	Yes	Common Ground Alliance	AC	Litigation by EPB, decisions in federal courts, and 2011 EPA Cross-State Air Pollution Rule
Toronto, Smog, 1950s	MTCC, Globe, Star	elite access, scientific research	Yes	MTCC	None	Provincial air pollution statute, tighter regulations and more active enforcement in Toronto
Ontario, Acid Rain, 1978 - 1985	CCAR, Globe, Star, others	elite access, scientific research	Yes	CCAR	A minority of CCAR members	Negotiated point source reductions in sulfur dioxide
Trail Smelter, Sulfur and Smoke, 1926-1941	CPA	elite access, institutional context enabling litigation	No	CPA	None	Case settlement and smelter control standards
Canada-US, Acid Rain and Ozone, 1978 - 2000	CCAR, Globe, Star	elite access, scientific research	Yes	CCAR	A minority of CCAR members	AQA and protocols
Connors Creek Power Plant, 1998 - 1999	Wide range of environmental, property, and health-based groups	elite access, federal statute to appeal to, institutional context enabling litigation	Yes	Michigan Environmental Council	Citizens Env. Alliance of SW Ontario, Michigan Environmental Council	NSR violation finding and court settlement
Trans-Pacific Air Pollution, 1999 - 2011	US Chamber, AAM	elite access, scientific research	Yes	None	None	Multilateral scientific task force

Two of the case studies involved the extensive use of litigation encouraged by property-based interests, namely the Trail Smelter Dispute and the litigation over CAA rulemaking in the late 1990s and 2000s. Each of these instances is reflective of a specific institutional context empowering property-based interests to use this mechanism. For example, Munton and Temby (2012) argue that the institutional context of the Trail Smelter Dispute—in particular, the presence of a national border—accentuated the capacity for litigation to be important. In a comparison with property-led smelter smoke abatement efforts in Sudbury, Ontario, around the same time, the presence of a border in the Trail Smelter Dispute prevented a state or province from banning property from accessing the court system to address the problem as Ontario did in the 1920s. As a result, the issue was elevated to the federal level for resolution. For the New York-led CAA litigation, the presence of a statutory framework on which to sue for compliance was necessary, but so was a state government with the expertise in litigating environmental issues. New York’s Environmental Protection Bureau is staffed by both attorneys and scientists who build cases on the basis of existing law and available scientific knowledge.

The property-based interest (or organization representing property-based interests) studied also made extensive use of scientific information and rhetorical arguments about the economic consequences, or causes relating to economic consequences, of the pollution they were fighting. Newspapers in California and Ontario editorialized on the economic consequences of smog and acid rain while concurrently reporting on the complementary claims made by other groups. The Northport CPA tried to argue, with the help of American scientists, that Trail Smelter smoke was causing

“invisible injury” and thus damaging the farmers economically. The U.S. Chamber of Commerce, as well, used scientific knowledge about the distant sources of air pollution, coupled with statistics about the extent of the damage NAAQS non-compliance causes, to advocate for special allowances accounting for foreign emissions.

A second dimension of variation among the case studies is whether the actors qualify as economic elites. In general the actors, consisting of urban newspapers, local growth coalitions, real estate developers, wealthy property owners, and groups representing them, were economic elites. However, a notable example is Northport’s CPA, which was composed of local farmers not fitting this description. Even if Trail’s local newspaper had advocated on its behalf, as the local influential Sudbury newspaper did on behalf of local farmers there, it is not credible to consider this an economic elite since the local market was so small. The Trail Smelter Dispute is thus a bit of an anomaly in this instance as it provides a notable example of an instance of grassroots influence over the policy process.

Third, some of the actors were coalitions, while some were not and yet, at times, participated in coalitions of other actors with similar preferences on particular issues. The Adirondack Council, for example, is an interest group rather than a coalition, yet it has participated in coalitions such as the Environmental Planning Lobby and the Common Ground Alliance, which advocated for air pollution policies aimed at ensuring the long-term economic prosperity of the region. The Canadian Coalition on Acid Rain was a diverse coalition comprised of a wide range of groups (property-based groups among them, but not necessarily dominating decisionmaking) with a common objective. Furthermore, while several groups worked together to oppose the restarting of the

Connors Creek Plant in Michigan, these did not exhibit the level of formal organization that would qualify them as a coalition.

Fourth, by the 1980s, it became increasingly difficult to distinguish property-based interests from regional environmental groups since property had begun to describe their objectives in terms of environmental protection. Since clean air is a material imperative for property and a socially constructed ideational imperative for environmental groups, there is no reason a group cannot marry the material and ideational in how it articulates itself. The Adirondack Council is manifestly an environmental group, while the CCAR and protest effort against the Connors Creek Power Plant all included the participation of environmental groups. Thus, while a variety of actors concerned with property values advocate for air pollution relief, these actors wear many hats, and the hat of environmentalism is now commonplace.

Finally, the policy outcomes that the property-based interests obtained varied substantially across time and jurisdiction. In Los Angeles and Toronto during the 1950s, advocates for clean air policy obtained state or provincial statutes granting the governments more authority to address the problem, and also more aggressive enforcement actions locally. Actors in both locations also made efforts at addressing pollution from transportation sources, even though this was either outside of their jurisdiction or related to an industry manufacturing items in another state.

Later, as acid rain became a politically salient issue, the policy responses that the property-based interests in Ontario and New York were able to obtain were decidedly different. In New York, a statute creating a statewide cap-and-trade system was passed. In Ontario, the acid rain program consisted instead of firm-by-firm specific reduction

commitments. This type of policy response continued into the late 1990s as Ontario decided to regulate nitrogen oxide emissions through negotiations with OPG, resulting in the installation of selective catalytic reduction technology on its coal-fired power plants. In New York, on the other hand, the policy outcome of choice, encouraged by the Adirondack Council, was to address ground-level ozone through litigation over CAA rulemaking. This was reflective of the fact that New York had already regulated its own air pollution sources strictly and saw the CAA as a way to require upwind sources to do the same. The end result, once the cases finished being adjudicated, was a settlement and new federal rulemaking.

The other case study using litigation extensively was the Trail Smelter Dispute. This one shares a striking similarity with the New York case study over federal rulemaking, namely, the pollution was travelling from another region and litigation was the means available to settle an inter-jurisdictional dispute. Yet not all inter-jurisdictional disputes turned to litigation. The Canada-US air pollution issue resulted instead in a bilateral treaty with annexes which, although weak and relatively inconsequential, is what the property-based interests sought. The Connors Creek Power Plant matter involved regulation enforcement litigation, but equally important as a policy outcome was the finding, by the Michigan Department of Environmental Quality and the Wayne County Air Quality Management Division in response to the concerns raised by a wide range of place-based local actors, that the plant was a new source of pollution and therefore subject to New Source Review.

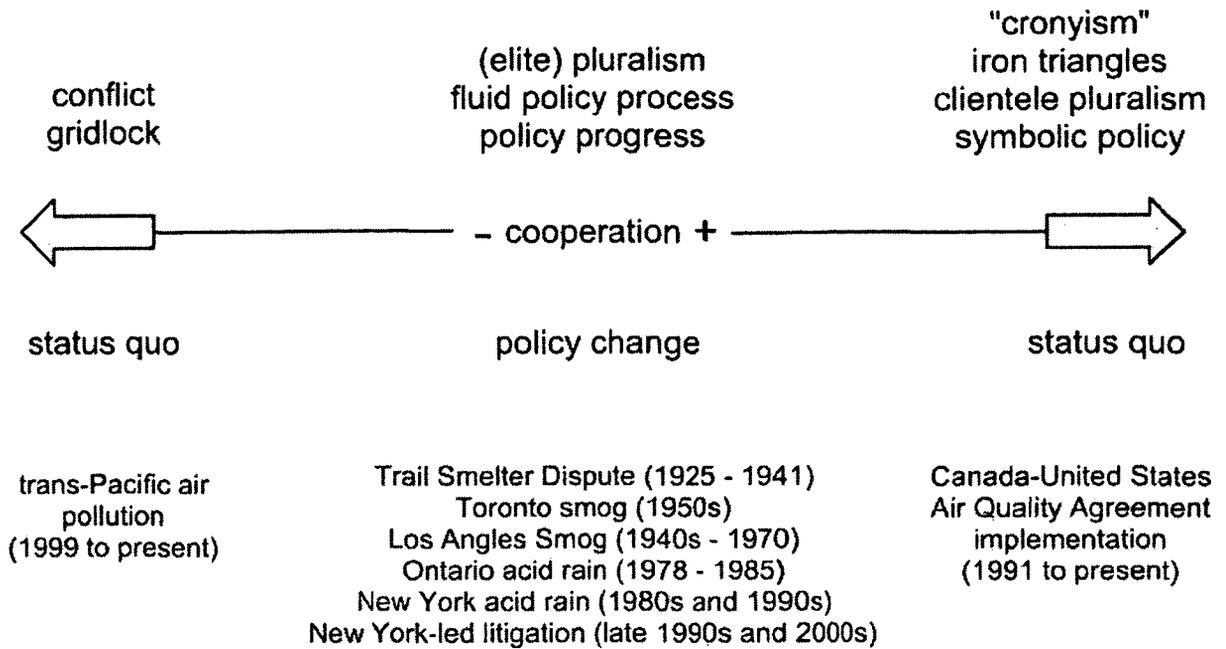
On the issue of trans-Pacific air pollution, the policy outcome can best be viewed as underdeveloped, as the interested actors have only recently begun to express policy

preferences and the only policy outcome (a task force under the multilateral air pollution convention) was undertaken without their participation. The fact that the AAM's policy recommendations are similar to those of the TF HTAP's 2010 report suggests the possibility for future cooperation on the issue, yet these similarities have apparently so far gone unobserved by the interested actors.

Returning to the framework on cooperation and policy change discussed in Chapter 2 and presented in Figure 1, Figure 2 places each of the case studies in one of the three categories. Most resulted in a policy change that represented a compromise between property and industry. In every one of these circumstances, the compromise was one in which technological means were used, at a cost to the industrial sector investing in the technology. However, it was generally less disruptive than what the property interests claimed to have sought. On the left side, under "conflict" and "gridlock," is trans-Pacific air pollution; on the right, the implementation of the AQA.

Although more research into each of these case studies would be necessary to understand precisely what affected the institutional context leading to collusion, gridlock, or a more fluid process, one factor clearly influencing outcomes is the presence of a national border over which the offending pollution travels. In the two instances of failed governance, a transborder air pollution problem was not addressed politically by international cooperation. However, as compared to another failed case of governance, Sudbury in the 1910s and 1920s, the border in the Trail Smelter Dispute represented an institutional feature enabling effective air pollution governance. Thus, the case studies suggest that national borders matter, but in interactive ways that are highly contingent on other properties of the institutional context.

Figure 2: Cooperation and Policy Change by Case Study



2. Observations and Implications for Theory

The findings of this research project include observations relevant to the study of the following themes commonly discussed in the environmental governance literature: (1) ecological modernization, (2) voluntarism, (3) scientific knowledge, (4) epistemic communities, and (5) cooperation. First, although the analytical concept of ecological modernization dates back to no further than the 1980s, the business and policy practice of using modern technology to lessen air pollution, often with direct economic benefits to industry, has existed for the temporal duration covered by this study (Hajer 1997; Christoff 1996; Spaargaren and Mol 1992; Mol 1996; Buttel 2000). The Trail Smelter captured pollutants and used them for its profitable fertilizer product. Factories in

Toronto during the 1950s saved on costs by making efficiency improvements to their industrial practices. While automobile manufacturers did not appear to have lowered costs in their initial efforts to reduce pollution, they did it with engine modifications at a much lower cost than originally predicted. Afterwards, the CAA was written to mandate the installation of “best available technology”; and more recently, in the late 1990s, Ontario power plants installed selective catalytic reduction technology as a relatively inexpensive means of limiting the release of nitrogen oxides. Similarly, in his study of American air pollution policy, Gonzalez (2005) showed that the availability of technological solutions imposed a constraint on air pollution abatement. Thus, ecological modernization should be understood as the historical norm in air pollution governance; not only has it been a longstanding practice in North America, it has been the primary means through which air pollution is addressed. Given that the alternative would consist of changes in production and consumption—both imperatives for economic growth—it should come as no surprise that ecological modernization tends to be the outcome of compromises between property and industry.

Second, the analysis conducted for this project has not revealed a long-term trend away from command-and-control regulation toward so-called “voluntary” measures or “reflexive laws” occasionally discussed as a feature of modern North American environmental governance (Lombard 1999; A. Jordan, Wurzel, and Zito 2003; Thomas 2003; Fiorino 2006; Winfield 2009). Analyses suggesting a long-term change in this dimension of regulation fail to observe that (1) air pollution governance has always been negotiated with industry, not unilaterally forced on it; (2) industry has nearly always responded on its own terms, with technology-based solutions; (3) the command-and-

control regulations (in particular, the CAA) were not enforced aggressively for decades; and (4) regulations have become progressively stricter, despite the occasional budgetary starving of environmental departments—usually resulting from the election cycle, not long-term ideational shifts. There has certainly been a pause in air pollution statute making in recent years, but a lot of governance has occurred within existing authority and mandate (notably, the litigation over NSR and the resulting Cross-State Air Pollution Rule of 2011). If anything, and despite the sulfur dioxide trading program, air pollution governance in the United States has become *more* command-and-control through the resurrection of NSR and its recent expansion for the regulation of carbon dioxide emissions.

Third, while what is known scientifically is important, as is how this information is framed, several factors complicate our ability to make broad generalizations about scientific knowledge. First, the most rigorous scientific knowledge available has on at least one occasion been used to weaken an air pollution regime, not strengthen it. This happened in the Trail Smelter Dispute, where the Canadian side presented the stronger scientific case, insulating Consolidated from accountability for the “invisible injury” the Northport farmers and the USDA tried to establish. Second, half-truths and conjecture have at times been as effective as true and rigorous scientific evidence in encouraging clean air policy. As discussed in Chapter 4, evidence about the harmful effects of urban smog on health was lacking, yet it did not stop the print media from printing quotes and hearsay claiming otherwise. Third, it is necessary to distinguish between air pollution which is visible and for which the effects and consequences are clear enough for a layperson to form an opinion about, and pollution which has an invisible effect, where

science must provide the eyes enabling people to see its effects. For example, in Ontario, no scientists needed to tell Torontonians in the 1950s that smog blanketed the city, what caused it, that it was unhealthy, and that it was costly for businesses. Yet decades later, the extent and causes of the province's lake deaths were unknowable without scientific information drawing the cause-and-effect narrative. Fourth, regulations have a way of encouraging businesses to care about scientific information they otherwise might not have. The U.S. Chamber of Commerce's interest in the science of intercontinental air pollution stems from its efforts to use it as a basis for regulatory relief under CAA NAAQS, yet it still represents an American business association expressing concern about air pollution. Given this, analyses focusing on the role of science in the environmental policy process should also account for these complications, not the least of which is where the motivation to address the problem to begin with derives from.

This relates to the fourth thematic observation, about epistemic communities. The analysis here calls into question the transferability of the epistemic community approach, which was originally used to account for European environmental governance, to North American air pollution politics. There are two reasons for skepticism. First, the analysis echoes Bernstein's (2001) findings that influential groups in environmental governance are often not "knowledge-based" and led by scientists. Second, and more important, the epistemic communities approach views regime implementation a scientist- and government-led process, whereby it occurs to the extent that the scientists comprising the epistemic community are able to amass power within government and "insinuate [themselves] into policymaking" (Haas 1990, 57). Haas says that an epistemic community retains power "through its own intellectual solidarity and through repelling

challenges by interest groups.” Perhaps this is true in Europe, but the findings of the research here suggest that, in order for a regime to be effective, those with an economic interest in its implementation must have access to it. If a regime does not act as a site of contestation between economic winners and losers, it will lose relevance as they search for another venue. The CAA, for example, has evolved due in no small part to the efforts of the Adirondack Council and the Attorneys General of New York to protect the state’s tourist economy and property from acid rain. The AQA, on the other hand, has ceased to be relevant, as actors seeking cross-border air pollution relief have instead appealed to government officials in charge of implementing the CAA. Thus, this analysis suggests that scholars applying the postulates of the epistemic community approach need to find a way to account for the importance of involving the source of the political will to address the problem in the implementation of the policy response.

Finally, the research findings presented here suggest that cooperation is not unambiguously beneficial in promoting a policy response to environmental problems. The IR literature on environmental governance, in particular the regime theory literature, tends to articulate cooperation as a normative ideal and discusses the conditions under which it is possible (Keohane and Martin 1995; Keohane 2005; Neumayer 2002). However, cooperation on matters of environmental governance, when occurring to the point of the bureaucratization and depoliticization of the regime, can lead to ineffective governance. Regulatory capture, for example, as arguably occurred in the United States with the Atomic Regulatory Commission after World War II, represents a highly cooperative arrangement, yet not one consistent with rigorous environmental oversight. In describing the tendency of cooperative arrangements to derail governance, Oran

Young (1999, 18) points out that “the creation and operation of regimes can sometimes produce perverse results by generating a false sense that certain problems have been taken care of and do not require additional attention.” The Canada-United States AQA has arguably served this symbolic function while not contributing much to the resolution of transborder air pollution. Furthermore, the highly cooperative relationship between the two federal governments on this issue has actually enabled the Air Quality Committee to publish biennial reports reviewing its own implementation, giving a positive impression of the regime’s success. While cooperation on environmental problems is beneficial under certain circumstances, then, this is not universally true.

3. Suggestions for Future Research

In exploring the role of property-based economic interests in American and Canadian air pollution governance, this research project identified a variation in the success of air pollution governance that cannot be fully explained by the participation of these interests alone. The CCAR, the *Star*, and the *Globe* all pushed for a Canada-US bilateral air pollution regime, yet the resulting AQA has not contributed much to the management of the problem. The AAM has produced a report with policy recommendations about how to address trans-Pacific air pollution, and the US Chamber has lobbied the EPA for regulatory relief on the basis of this problem, yet no solution has been in the works. Clearly other variables are important here in determining the context in which property-based groups are influential.

Figures 1 and 2, above, suggested that the institutional context is important—cooperation, resulting from the degree of trust and social capital present in the policy subsystem for the issue. Yet given that an in-depth exploration of institutional context,

with operationalizations of trust and social capital, was outside the scope of this project, exploring this matter would likely be a fruitful avenue for future research. Elinor Ostrom's (1990; 1999) research on institutional context has focused mainly on the management of common pool resources, and the ways in which trust and social capital facilitate cooperation despite the threat of free riding. While air pollution governance in some ways resembles a common pool resources problem, the types of scenarios presented in this dissertation are arguably not related to free riding. Rather, they are concerned with the relationships among government departments and between departments and businesses, writing rules and implementing laws.

Questions for further research include: What institutional context enables property-based interests to have influence on clean air policy? What are the conditions that lead to collusion among government departments purportedly seeking to address air pollution? What leads to gridlock between government and business groups seeking air pollution abatement? Does the frequency of communication in informal versus formal settings make a difference and, if so, what are ways of facilitating this? A study seeking to answer these questions could focus on air pollution governance; however, given that property-based interests have begun to lobby for climate change policy, and that the United States' most populous cities are investing in climate change adaptation, it may be possible to extend this research to climate change as well. As climate change governance is a process of multi-department and multi-stakeholder coordination, the opportunities to explore cooperation and conflict among different categories of implicated actors would be plentiful.

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