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ENVIRONMENTAL POLITICS AND THE REAGAN ADMINISTRATION: INTERESTS, IDEAS AND VALUES IN INTERNATIONAL LEADERSHIP

by

Peter Douglas Berry

A thesis submitted in conformity with the requirements for the degree of Doctor of Philosophy
Graduate Department of Political Science
University of Toronto

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Environmental Politics and the Reagan Administration: Interests, Ideas and Values in International Leadership

Ph.D., 1998
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This dissertation is a comparative case study of the Reagan administration's approach to acid rain deposition and ozone layer depletion during the 1980s. The concern of this study is with the wide policy divergence that developed as this administration responded to these two environmental problems. Examining the historical record, we see that the United States took an international leadership role in efforts to create a CFC regime but resisted all attempts to forge an agreement aimed at controlling acid rain.

This dissertation focuses on the interplay between scientific ideas, societal interests and decision maker values and how they shaped the policy processes that developed around these issues over time. The concepts of scientific consensus, policy network, critical event, and value shift help to structure our understanding of why this administration responded to the threat of ozone depletion so aggressively but did little to reduce acid rain.

The interest group approach reveals to us the ways that pluralist forces increased the capacity of the United States government to regulate CFCs and reduced its ability to address acid rain deposition. The focus on decision maker values captures
important nonrational individual level inputs into policy making that, heretofore, have not been the purview of International Relations theory. The investigation of epistemic community theory revealed fundamental weaknesses with this approach but provided an important starting point for understanding how ideas mediate between, and interact with, interests and values to affect policy formulation in the state.

This dissertation concludes by arguing that, given the special character of environmental issues in the international political system, a unique approach to these problems that links ideas, interests and values will be required to fully understand them. This type of approach greatly expands our understanding of the acid rain and ozone layer cases and also shows great potential for examining the current efforts by the international community to respond to climate change.
ACKNOWLEDGEMENTS

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Finally, I wish to thank my wife Michelle for bringing so much love and light into my life. This dissertation is dedicated to her.
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<td>ANPR</td>
<td>Advanced Notice of Proposed Rulemaking</td>
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<td>CAA</td>
<td>Clean Air Act</td>
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<td>CBO</td>
<td>Congressional Budget Office</td>
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<td>CFCs</td>
<td>Chlorofluorocarbons</td>
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<td>CMA</td>
<td>Chemical Manufacturers Association</td>
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<td>EC</td>
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<td>ECE</td>
<td>Economic Commission for Europe</td>
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<td>EDF</td>
<td>Environmental Defense Fund</td>
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<td>FAA</td>
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<td>FEC</td>
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<td>HEP</td>
<td>Human Exemptionalist Paradigm</td>
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<td>IMOS</td>
<td>Committee on the Inadvertent Modification of the Stratosphere</td>
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<tr>
<td>LDC</td>
<td>Less Developed Country</td>
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<tr>
<td>MATEX</td>
<td>Massive Atmospheric Transport Experiment</td>
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<td>MIT</td>
<td>Massachusetts Institute of Technology</td>
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<td>MSLF</td>
<td>Mountain States Legal Foundation</td>
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<td>NAAQS</td>
<td>National Ambient Air Quality Standards</td>
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<td>NAPAP</td>
<td>National Acid Precipitation Assessment Program</td>
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<td>NAS</td>
<td>National Academy of Sciences</td>
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<td>NASA</td>
<td>National Aeronautics and Space Administration</td>
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<td>NCAR</td>
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<td>NGO</td>
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<td>NOZEI</td>
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<td>New Source Performance Standards</td>
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<td>ODS</td>
<td>Ozone Depleting Substances</td>
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<td>OECD</td>
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<td>SIP</td>
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<td>STAPPA</td>
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<td>UBC</td>
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<td>UMW</td>
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<td>UNEP</td>
<td>United Nations Environment Program</td>
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INTRODUCTION

The last few decades have witnessed significant progress in the attempt by a number of countries to address several domestic environmental issues. Conservation efforts are under way in many parts of the world and states have achieved some success in controlling pollution levels. However, during the 1980s the environmental agenda began to shift in a number of countries as the international and fully global dimension of ecological degradation began to be recognized by decision makers. Due to the triple processes of population growth, rapid industrialization and increased fossil fuel consumption, a new category of global environmental issues has emerged. In a world of sovereign states and weak international institutions it is increasingly the case that shared or common global resources need to be protected. Highest on the environmental agenda are global problems such as loss of biodiversity, pollution of the oceans, ozone depletion and potentially devastating climate change.¹

To address these environmental problems the international community increasingly looks to the United States to provide the necessary leadership to facilitate the creation of regulatory regimes. Speaking on the dangers of climate change in July of 1991, British Prime Minister John Major stated, "The world looks to the American government for leadership on this issue as on

others." In addition, the emergence of global climate-related issues has presaged the creation of new multilateral and regional regimes. It has also precipitated the creation of new organizations to curtail ecological degradation and the institutional evolution of existing organizations to pursue such goals. Yet the activities of many regimes and organizations are often shaped by the most powerful members within them. As such, active encouragement of the United States will remain important for the creation of effective global environmental agreements in the future.

A complete understanding of how countries in the international political system, such as the United States, respond to environmental problems is not forthcoming from the dominant theories in the International Relations field. Theoretical approaches that look to the structure of the international system for a determination of state behaviour fail to examine in detail the nature and constitution of state interests and how they change


3 For example, in order to respond to the southern African and Sabelian droughts, regional organizations such as the South African Development Coordination Conference (SADCC) and the Permanent Interstate Committee for Draught Control in Sahel (CILSS) created short-term and long-term programs. See Michael H. Glantz, *Regional Organizations in the Context of Climate Change.* (New York: Springer-Verlag, 1994), 45.

over time.\textsuperscript{5} Since the new ideas and information that constitute environmental problems often affect the preference formation of decision makers, an understanding of how states approach cases of ecological degradation requires an examination of domestic level political processes. In addition, the way in which interest groups shape policy making as well as how value orientation influences individual decision makers are critical determinants of state behaviour towards environmental issues. Therefore, this examination of environmental policy making by the Reagan administration during the 1980s seeks understanding not through the more traditional structural accounts of state behaviour, but rather in the realm of domestic level political analysis.

Upon coming to office in 1981 Ronald Reagan was castigated by a number of environmental advocacy groups for formulating policy on the assumption that environmental protection and economic growth are fundamentally incompatible and, as such, environmental regulation should be relaxed to encourage economic development. Many groups were quite fearful of the direction the Reagan administration would take on ecological issues during its first term. In his article of 1980 titled, "The Reagan Years: Environmentalists Tremble", Constance Hoden notes that before Reagan became president he expressed a consistent anti-environmentalist line: he attacked the EPA's ban on DDT, defended

the baby seal killing program, complained that the wilderness system had protected too much forest from the timber industry and favoured returning public lands in the West to private ownership. In addition, this administration was criticized shortly after arriving in Washington for virtually destroying the Environmental Protection Agency (EPA) through budget cuts and staff reductions and for proposing to weaken many important controls in the Clean Air Act.

Yet a close examination of the Reagan environmental record suggests that, beginning in the mid-1980s, the United States was somewhat less draconian than predicted and even took an active role in attempting to address one of the emerging global ecological problems. In response to growing concerns over possible destruction of the ozone layer, the Reagan administration eventually became an international leader in its attempts to address this problem. It conducted much of the scientific

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7 James Ridgeway, "Pollution is Our Most Important Problem", *Nation*. (November 7, 1981), 181.

8 Chlorofluorocarbons, until production ceased in 1996, had wide applications in thousands of products including refrigeration, air conditioning, aerosol sprays, cleaning solvents, rigid foam insulation, plastics, electronics and fire extinguishers. These chemicals do not break down rapidly in the lower atmosphere but rather migrate slowly up to the stratosphere. There they are eventually broken down by solar radiation and the chlorine atoms released during this process destroy ozone molecules. Ozone depletion may have many effects on humans, animals and the environment including increased rates of skin cancer, weakening of the immune system, decreased marine productivity, crop losses and global warming.
research, influenced recalcitrant countries to support an international agreement regulating chlorofluorocarbon (CFC) use and proposed strong regulation of CFCs for the international community. As Richard Benedick argues, on the issue of CFC controls, "the U.S. government took the leadership role...it developed a comprehensive global plan for protecting the ozone layer and tenaciously campaigned for its international acceptance." Indeed, due to the efforts of the United States and the United Nations Environment Program (UNEP), the Montreal Protocol which limited the production and use of CFCs was concluded and signed by 34 nations in September of 1987. This occurred only nine months after formal negotiations began.

It was on the more local issue of acid rain controls that

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9 In January of 1986, the United States proposed a reduction in CFC production with its "Stratospheric Ozone Protection Plan" and, in December of the same year, advocated a worldwide CFC reduction of 95 percent by the next decade. Sharon Roan, Ozone Crisis - The 15-Year Evolution of a Sudden Global Emergency. (New York: John Wiley and Sons Inc., 1989), 196.


12 Acid rain or acid deposition describes the processes through which acidic emissions, largely from manmade sources
little progress was made with Canada in creating a bilateral agreement. In this case the Reagan administration remained obstinate; the Clean Air Act would not be reauthorized and strengthened to control acid rain until scientific evidence indicated a need for such action. This evidence was required to show, beyond any doubt, that ecological degradation caused by U.S. industry SO$_2$ emissions was actually occurring and that regulatory measures would be effective in halting this environmental damage.$^{13}$

This dissertation has two goals. The first is to demonstrate that the Reagan administration did indeed approach these two issues in very different ways. I argue that the United States under Reagan took a leadership role in the ozone layer negotiations and signed the Montreal Protocol in 1987. Yet it showed little leadership in the acid rain case and repeatedly resisted Canadian efforts to create a bilateral acid rain agreement.

Acid rain became a political issue in the United States in 1977 when it climbed onto the agenda of Canadian-American relations after Canadian Environment Minister Romeo LeBlanc noted the urgency including coal-fired power plants and automobiles, make their way from the atmosphere into ecosystems as precipitation or as dry particles. A number of effects to humans and ecosystems from acid rain have been identified. These include, destruction of aquatic life, forest and crop damage, reduced visibility, corrosion of building materials and respiratory problems in humans.

of this problem. In 1978 the Carter administration endorsed the creation of the U.S.-Canada Research Consultation Group on the Long Range Transport of Air Pollution. After the results of this joint fact finding effort implicated the United States as a major source of the acid rain falling in Canada, a Statement of Principles was signed in July of 1979. Both governments thereby recognized their obligation to control transboundary air pollution and accepted a set of basic principles and practices to guide future efforts toward achieving this goal. A little over a year later, on August 5, 1980, the Memorandum of Intent was signed in Washington acknowledging that, "the best means to protect the environment from the effects of transboundary air pollution is through the achievement of necessary reductions in pollutant loadings." It also formally committed the two governments to begin negotiating a bilateral air quality agreement by June 1, 1981.

Concern over the possible depletion of the ozone layer attracted the attention of U.S. decision makers in 1975 when a presidential task force, the Committee on the Inadvertent


Modification of the Stratosphere (IMOS), was organized by the federal government to investigate the issue.\textsuperscript{17} Noting that ozone depletion was a "legitimate cause for concern", the conclusions of this task force suggested that the National Academy of Sciences (NAS) conduct a study on this issue. If CFCs were determined to be hazardous immediate regulatory action was recommended.\textsuperscript{18} Even before the NAS report revealed in September of 1976 that CFCs were damaging the environment and should be restricted, 11 states had legislative proposals regarding CFC regulation. Oregon was the first state to ban the sale of CFCs in aerosols in June of 1977.\textsuperscript{19}

On the international front the Carter administration hosted a meeting in April 1977 during which the possibility of international CFC regulation was raised for the first time.\textsuperscript{20} The United States, being the first country to ban CFCs in aerosols in 1978, once again took the initiative at a meeting in April of 1980 and announced its intention to freeze CFC production at 1979 levels. It thereby maintained a leadership role in the multilateral efforts to create a comprehensive treaty to protect the ozone layer.\textsuperscript{21}

In general, Ronald Reagan's militant conservatism and his emphasis on deregulation to promote economic growth meant that

\begin{itemize}
\item \textsuperscript{17} Roan, 39.
\item \textsuperscript{18} Roan, 41.
\item \textsuperscript{19} Roan, 51.
\item \textsuperscript{20} Benedick, 41.
\item \textsuperscript{21} Roan, 102.
\end{itemize}
environmental issues did not receive much consideration from this administration. Reagan's appointment of former coal industry lawyer, Anne Burford, as head of the EPA reflected the attitude taken towards environmental management by his administration. So too did the administration's massive budget cuts to this agency. Although Reagan, once in power, expressed his intention to honour the agreement within the Memorandum of Intent obligating the United States to negotiate a bilateral acid rain agreement with Canada, he proceeded to give this issue very low priority and, in fact, effectively ignored it for nearly a decade. Indeed, at the Canada-U.S. summit held in April of 1988 Reagan was still promising Canadian officials to consider their proposals for a bilateral agreement on acid rain.

Similarly, Burford's contention that ozone depletion did not pose a serious problem was supported by many administration officials. For this reason, during the first few years of the

---

22 Anne Burford was Anne Gorsuch when she became head of EPA. Her later name is used throughout this study.

23 Environmental Protection Agency officials under the Reagan administration, "have buried commissioned studies with which they disagree, have fired or transferred most of the scientists knowledgeable about acid rain, have delayed and frustrated the reports of the bilateral working groups established by the 1980 Memorandum of Intent and have spurned the U.S. National Academy of Sciences because of a report it published calling for action against acid rain." Don Munton, "Diplomacy Under Constraint: Life, Liberty and the American Pursuit of Acid Rain", Alternatives. Vol. 11, (Winter, 1983), 18.

24 Wilcher, 27.

25 Roan, 105.
Reagan administration, very little progress was made in the development of an international treaty to control the production and use of ozone depleting substances. However, upon Burford's resignation as EPA head in 1983, the official U.S. position on this issue began to change. Consequently, in September of 1983 the United States joined the Toronto Group in proposing that an Ad Hoc Working Group develop a protocol which regulated production and consumption of CFCs. The United States was then instrumental in the signing of the Vienna Convention in 1985 that set the stage for international efforts to further scientific understanding of ozone depletion. Finally, this country released a new proposal for ozone protection in 1986. The "Stratospheric Ozone Protection Plan" instigated a new round of international workshops and ultimately led to the development and signing of the Montreal Protocol in September of 1987.\footnote{Roan, 144.}

I. The Dependent Variable

Consideration of these two issues reveals that a puzzling divergence emerged in 1983 between the policy stance taken by the Reagan administration on acid rain and that adopted due to concerns over ozone depletion. In effect, the United States in the mid-1980s became the leading advocate in the international community for a treaty regulating the chemicals responsible for destroying the ozone layer while at the same time resisting all efforts by
Canada and other states to develop bilateral or multilateral treaties to reduce acid rain emissions.

In this study, leadership, the dependent variable, is defined according to particular techniques and measures used by an actor to achieve collaborative or cooperative outcomes that change the status quo in the international political system. At the most basic level leadership consists of a sustained pattern of "acting first" in order to move the international community towards cooperation. Leadership also entails the display of followership by other states at some basic level. A state that is providing international leadership must be successful in convincing other states to join its efforts to achieve shared gains in international negotiating processes.

The three instruments of leadership a state may display in its relations with others include policy leadership, intellectual leadership and structural leadership. A country providing the international community with policy leadership acts as a catalyst and successfully imparts direction to other states on some issue. This will often entail raising an issue first, hosting international meetings, setting the agenda and taking concrete action to address a problem. Intellectual leadership consists of influencing the perspectives of the various actors trying to achieve collaborative outcomes by introducing new ideas or

---

generative systems of thought to the discussions. This form of leadership is most salient under conditions of uncertainty when the causal and principled beliefs of decision makers are most susceptible to change. The third category of leadership used in this comparative case study is structural leadership. Structural leaders use their superior economic or military power to acquire bargaining leverage in international negotiations.

The United States took the initiative and imparted collective direction to the world community on a number of occasions during the ozone layer negotiations. One particularly important example of policy leadership by the United States occurred in January of 1986 when administration officials announced their "Stratospheric Ozone Protection Plan". Then, in December of the same year, this country took the initiative again by advocating a worldwide CFC reduction of 95 percent by the next decade. The United States also used its vast scientific and technological expertise to conduct studies on ozone depletion and organized many of the forums at which discussion of this environmental problem occurred. Thus, it adopted an intellectual leadership role on this issue. Finally, by using the promise to share CFC substitute technology with other

---


29 Young, 1991, 288.

30 Roan, 196.
countries and threatening to restrict its large market to signatories of the Montreal Protocol, the United States demonstrated structural leadership on this issue.

Along a number of dimensions then, the policy response of the Reagan administration to concerns over the health of the ozone layer differed dramatically from that associated with the problem of acid rain deposition. Indeed, the most telling illustration of this divergence in policy outcomes is the fact that this administration became a signatory to the Montreal Protocol in 1987 while an acid rain agreement was not signed with Canada until Reagan was out of the White House. Therefore, the second goal of this dissertation is to explain, from a decision making perspective, why this divergence in policy outcomes occurred after 1984/1985 and why Reagan ultimately signed one agreement but not the other.

Existing explanations of Reagan's environmental diplomacy have yet to offer complete accounts of why this administration took a leadership role in the CFC negotiations, but yet did everything in its power to thwart Canadian government efforts to create a bilateral agreement limiting acid rain deposition on the continent.31 Such explanations span different levels of analysis32

31 On the question of acid rain controls see Wilcher, 1989. Also see Carroll, 1983. For a discussion of the ozone layer issue see Benedick, 1991. Also see Roan, 1989.

and include accounts that focus on the international system or place primacy on domestic political processes.

II. The International System

a. National Interests and International Pressure

A possible explanation for the decision by the United States to take a leadership role in one case and not the other focuses on the existence of power politics in the international system and the primacy of national interests in the determination of state behaviour. Early in his first term as president, Reagan indicated that a major priority of his administration was to work towards national self-sufficiency in energy by utilizing the country's vast coal and natural gas reserves. The severity of the recent OPEC induced energy shortages convinced administration officials that reducing U.S. oil dependency was a key component of the national interest. It is therefore possible that the refusal of the United States to impose costly SO₂ regulations on the utility and coal industries was driven by the perception that this would prevent this country from realizing its national interests and achieving energy self-sufficiency.

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33 See Waltz, 1979.

The evidence for this argument, however, is not compelling. Controlling acid rain causing emissions did not have to require that the United States burn less coal and therefore threaten its efforts to reduce its use of oil. Through the use of proven technologies or, by substituting low sulphur for high sulphur coal, larger quantities of this energy source could have been utilized while still reducing SO₂ emissions. In fact, the Carter administration planned to adopt these strategies in responding to the energy crisis in the late 1970s.³⁵

There is also little evidence to suggest that the goal of energy self-sufficiency significantly affected the behaviour of the Reagan administration in this issue area. While there were early efforts by Reagan to relax the Clean Air Act to permit the burning of more coal,³⁶ it soon became clear that, "the 'energy crisis', as far as the White House was concerned, was a dead issue."³⁷ Deep cuts to the Department of Energy during Reagan's first term translated into considerable reductions in staff and less support for research into conservation and renewable energy sources such as wind and solar power. The administration's decision in 1985 to

³⁵ There is little doubt that Jimmy Carter viewed the energy issue as a central component of the national interest. At the height of the energy crisis he called this national concern "the moral equivalent of war". Reagan: The Next Four Years. (Washington, D.C.: Congressional Quarterly Inc., 1985), 82.


halt the stockpiling of oil in the Strategic Petroleum Reserve further suggests that energy self-sufficiency factored less and less into policy making in this issue area.\textsuperscript{38}

In addition, a structural realist explanation\textsuperscript{39} focusing on the relative capability of the various parties in the two sets of negotiations is put into question because there were no great changes in the international distribution of power between 1975 and 1987.\textsuperscript{40} Moreover, such an account has difficulty explaining why in 1983 the United States joined a group of much less powerful states, the Nordic Annex, in proposing tough CFC regulations\textsuperscript{41} at the same time that it refused to bend under the pressure of major European


\textsuperscript{39} Most neorealists agree that because states are the dominant actors in world affairs, because they may be treated as rational egoists and since international politics is anarchic, states are generally motivated by self-aggrandizement or self-preservation. David Welch, Justice and the Genesis of War. (New York: Cambridge University Press, 1993), 11. The concept "national interest" refers generally (indeed, much too generally) to the core motivations that determine the political action of a state.

\textsuperscript{40} Robert D. Putnam and Nicholas Bayne, Hanging Together: Cooperation and Conflict in the Seven-Power Summits. (Cambridge: Harvard University Press, 1987), 272.

\textsuperscript{41} The Nordic Annex included Canada, Norway, Finland and Sweden. The United States also signed the Montreal Protocol in full knowledge that the requirements of this agreement would be more difficult for American companies than for their European counterparts to follow. American negotiator Richard Benedick (107) notes that because aerosols still constituted 50 percent of the CFCs produced in most European countries, they could take the steps to attain the reductions stipulated in the Montreal Protocol (a phase-out of aerosols) that U.S. companies took in the late 1970s. This meant that U.S. reductions would have to come in areas where substitutes were less available and more expensive.
powers such as Germany and France and sign the Protocol to the Convention on Long Range Transboundary Air Pollution. This agreement would have reduced SO₂ emissions by 30 percent by 1993.42

b. Canada-U.S. Relations

One attempt to explain the refusal of the Reagan administration to take a leadership role on the acid rain issue looks to the deterioration in relations between the Canadian and American governments in the early 1980s.43 According to this hypothesis the Reagan administration was in no mood to cooperate in creating acid rain controls with a government that had just embarked on energy and investment policies deemed to be detrimental to U.S. business interests. This account of events is placed in doubt by the fact that the Reagan administration also refused to take action on acid rain through multilateral negotiations similar to those that led up to the Montreal Protocol.44 If relations with Canada were the key factor one would not have expected the United States to resist multilateral efforts as well. Evidently, other considerations were decisive in this case. Moreover, it remains

42 Wilcher, 28.


44 The United States did not sign the proposed Protocol to the Convention on Long Range Transboundary Air Pollution (signed in 1985) that would have committed it, Canada and 20 ECE members to a 30 percent reduction of SO₂ emissions and a freeze on NOₓ emissions by 1993. Wilcher, 28.
unclear why the United States did not take a more active role in acid rain negotiations when relations between the two countries improved significantly in 1984. It was at this time that Brian Mulroney took office in Canada and initiated warmer relations with its southern neighbour by dismantling the National Energy Plan and the Foreign Investment Review Agency.

III. Domestic Political Processes

Several accounts of U.S. environmental policy making in these two cases that focus on domestic level processes are similarly incomplete.

a. Bureaucratic Politics

At first glance it would appear that the policy positions adopted by the various agencies and departments on the possible regulation of ozone depleting substances corresponded closely to their particularistic interests. For example, as guardian of government finances, the Office of Management and Budget (OMB) was resistant to regulatory programs that might be too costly. The Commerce Department, in providing a voice for industry, also opposed any type of regulation that might hurt companies involved in manufacturing CFC related products. For its part, the EPA after 1985/1986 continually supported strong controls of CFCs partly because of the promise of expanded regulatory powers.45

45 Litfin, 181.
However, there are serious limitations to this theoretical approach. A bureaucratic politics explanation has difficulty accounting for changes in the positions adopted by particular agencies over time. Sharon Roan expands the scope of a bureaucratic politics account in the ozone layer case by suggesting that it was the resignation of EPA administrator Ann Burford that created a window of opportunity for those agency officials in favour of greater action on the CFC issue. But this type of explanation encounters difficulty in showing why the influence of particular agencies tends to vary, often across different issue areas. For example, as Litfin notes, this theoretical approach does not readily explain why the EPA, a smaller U.S. agency, was so influential on the ozone layer issue but did not become a major force in the greenhouse gas debate while Reagan was in office. Such inconsistencies demonstrate that, "psychological attitudes and philosophical orientations are at least as important as bureaucratic position in determining actors' policy stances."

Without a close examination of the preferences and norms of the key decision makers in both cases it remains unclear why the change in EPA personnel would have affected the position the United

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46 For an excellent review and critique of the bureaucratic politics approach see David A. Welch, "The Organizational Process and Bureaucratic Politics Paradigms: Retrospect and Prospect", *International Security*. 17:2 (Fall, 1992).

47 Roan, 113.

48 Litfin, 182.

49 Litfin, 183.
States adopted on one set of negotiations and not the other. In fact, much of the literature focusing on the U.S. response to these ecological problems does not examine in detail the beliefs and normative views of the important decision makers. Therefore, it can only offer an incomplete account of the policy formation process in these cases.

With these caveats in mind, a later examination of how interest groups affected these two environmental issues includes a discussion of important bureaucratic political processes that shaped policy making. However, this reference to specific personnel changes and departmental conflicts is set among a more complex array of factors operating in these two cases. As such, it provides a starting point for a more in-depth examination of how pluralist forces, in conjunction with new knowledge and ideas, obtained policy making influence.

b. Public Opinion and Media Attention

There exists a general consensus among observers of American government that public opinion can have a direct influence on the decision making process and can thus shape public policy outcomes.\textsuperscript{50} With respect to the cases under study, some authors


One of the best ways of achieving the required public
have argued that the administration was greatly influenced by media coverage of these issues. The coverage of the ozone layer issue stressed the enormous dangers for individuals (particularly skin cancer, cataracts, reduced crop yields, depressed immune systems, and possible global warming) while coverage of the acid rain debate focused primarily on the huge economic implications of a clean up program and the meagre Canadian efforts in this regard.51

There are some difficulties with a hypothesis that focuses on the nature of public opinion in the United States to explain the policy choices of the Reagan administration in these two particular cases. Specifically, there are enormous complexities and difficulties associated with attempting to measure the impact awareness and pressure to get governments to act on an environmental issue is through press and electronic coverage of the environmental problem involved. Issues that receive great attention by the media become the problems or concerns the public regards as the nation's most important. Through such "agenda setting" the media manufactures conditions that shape government policy making. Kegley and Wittkopf, 232.

For example, in a study utilizing survey question results from 1935 to 1979 Page and Shapiro found a 64 percent congruence between public opinion and public policy change. See Michael Corbett, American Public Opinion. (New York: Longman, 1991), 336.


Don Munton notes the important role dramatic events play in public opinion formation when he cites the reaction of an American reporter during a trip in the 1980s organized by the Canadian government to observe Ontario lakes damaged by acid rain: "It would have been more effective if they had taken a bunch of fish and stuck them in a lake and brought them up dead." Don Munton, 1983, 14.
public opinion has on policy formation. A methodological problem is the fact that public opinion, as it influences decision making, is a very hard concept to operationalize. It is not immediately clear what element of public opinion - editorial opinion in the press, letter writing, public opinion polls, congressional comment, advisory boards, public demonstrations, or interest group opinion - the administration reacts to when formulating a policy response to a given problem.\(^\text{52}\) For this reason it is difficult to forge a direct link between changes in public opinion and the behaviour of a government on a particular issue.

Even if the operationalization of this concept was a lesser problem, there is reason to believe that public views on the need for acid rain controls and CFC regulation do not help to explain why the Reagan administration decided to sign the Montreal Protocol in 1987 but resisted reaching an agreement with Canada to limit acid rain causing emissions. While there seemed to be widespread public support for CFC regulations before the Montreal Protocol was signed, it is also the case that polling in 1985 found that over 90 percent of Americans were aware of the acid rain danger and a majority wanted tougher laws.\(^\text{53}\) A complete explanation of why the United States took the leadership in one set of negotiations and not in the other will therefore have to go beyond a public opinion


\(^{53}\) Robert Collins, "And Still the Skies Rain Acid", (July, 1987), 156.
analysis of the historical record in these cases.

c. Issue Area

There has been some effort by observers of International Relations theory to investigate the effect of issue area on the nature of foreign policy making. James Rosenau argues that different categories of issues shape the policy making process by engaging different numbers of actors that vary in their willingness and ability to act. Moreover, decision making involving domestic issues significantly differs from foreign policy concerns because society defers more readily to the imperatives of government officials involved in deliberations over the nature of U.S. relations with other states. Consequently, interest groups and other pluralist forces play a more limited role in foreign policy making. It is reasonable then to suggest that since acid rain is a domestic issue and ozone layer depletion a foreign policy

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55 Porter, 407.

56 Bernard Hennessey, *Public Opinion*. 5th ed., (Belmont: Brooks/Cole Publishing Company, 1985), 346. Theodore Lowi argues that issue areas defined by state function have corresponding policy processes divided among the domestic and foreign policy realms. Therefore, the protection issue area is unique to foreign policy matters while redistribution is restricted to domestic policy concerns. Issues involving regulation and distribution characterize both domestic and some foreign policy issues. Porter, 410.

issue there was a major difference in how policy was formulated in each case.

This explanation is put into question because there is little evidence substantiating the claim that these two environmental cases belong to different issue areas. Several commentators on environmental politics have suggested that, like ozone layer depletion, acid rain is a "global" issue with a substantive foreign policy element to it.\(^{58}\) President Reagan himself recognized the fundamental similarities between acid rain and ozone layer depletion. In a statement to Congress in 1987 he described these two issues as "...problems which demand international cooperation on a regional or even global scale".\(^{59}\)

More importantly, during the 1980s the United States was involved in international negotiations aimed at limiting acid rain deposition and ozone layer depletion. U.S. representatives observed, but did not join, international efforts to create a protocol to the Convention on Long Range Transboundary Air Pollution in 1985 which would cut SO\(_2\) pollution by 30 percent.\(^{60}\) Three years later they participated in the Geneva negotiations


\(^{60}\) Wilcher, 28.
aimed at producing a protocol on emissions of nitrogen oxides.\textsuperscript{61} As such, the Reagan administration's involvement with the acid rain issue was not limited to the realm of domestic politics.

There is also a growing recognition in the International Relations literature that the difference between issue areas or between "low" politics and "high" politics is gradually disappearing. No longer is there a clear-cut foreign affairs hierarchy with a small number of problems involving questions of national security, territorial integrity, and political independence at the top and more domestic issues such as commerce, energy and the environment at the bottom.\textsuperscript{62} Rather, the acid rain and ozone layer depletion cases examined here should be conceived as two sets of international environmental negotiations involving important political processes at the domestic level.

d. Ideology

In an effort to understand the acid rain policy stalemate some scholars have argued that the anti-environment and anti-regulation sentiment that pervaded the Reagan administration was behind its inaction on this issue. Reinforcing this view was the widely held conviction by decision makers that the United States (especially in relation to Canada) was already a world leader in environmental


\textsuperscript{62} Hastedt, 12.
management and therefore would not be pushed into signing an acid rain agreement.\textsuperscript{63} It may be the case that these variables played some role in curtailing efforts towards establishing SO\textsubscript{2} and NO\textsubscript{x} emission controls. However, action to protect the ozone layer taken by the Reagan administration required the introduction of new government regulations on a major U.S. industry as well as a financial commitment to support the creation of a new international environmental regime. It is therefore not clear why Reagan's pro-business ideological orientation would have created the impulse to avoid acid rain regulations but apparently had no such effect on efforts to control the emission of CFCs. The fact that the ozone layer discussions were subject to the same ideological constraints and yet took only nine months to produce an agreement suggests that ideology was not crucial in shaping the final outcome of these two sets of negotiations.

While this type of explanation is rejected because of its inherent simplicity, this study does examine in detail the way in which the value orientation of Reagan administration officials influenced these two cases of environmental policy making. However, value orientation is not viewed here in static terms but

rather as an important variable that shifted in response to new ideas and information and therefore shaped the policy making processes in different ways.

e. Prospect Theory

Prospect theory arose in response to the failure of rational choice theory in providing a descriptively valid account of decision making. Prospect theory incorporates two phases of the choice process: framing and editing, notably absent from rational choice theory, and the process of evaluation, highlighted by both approaches. According to prospect theory, depending on the sophistication, experience, norms and habits of the decision maker, various options presented in the choice process are weighted or "framed" differently. Empirical inquiry has demonstrated that individuals are generally risk averse with respect to gains and risk acceptant with respect to losses. Framing is important because the levels of risk experienced by decision makers affect the ultimate (policy) choice made as well as the nature of the choice process itself. Individuals making a choice from within the domain of losses where they are risk acceptant are less likely to

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65 Tversky and Kahneman, 257.

66 Levy, 172.
follow rational norms than if the issue involved is framed as a gain where they are risk averse.\textsuperscript{67}

One explanation for why Reagan took a leadership role in the CFC case is that he, or other administration officials, framed this issue differently than they did acid rain deposition. That is, ozone layer depletion, with its attendant negative health effects, was situated in the domain of losses. In contrast, acid rain may have been perceived to exist in the domain of gains; possibly as an opportunity for the administration to further their deregulation agenda or keep federal spending low.

Had Reagan and his officials been preoccupied with the possibility of immediate losses from ozone layer depletion, prospect theory argues that the decision making process would have been devoid of rational calculation and deliberation. In fact, the debate that took place followed rational norms: there was a systematic evaluation of options, there were calculations of costs and benefits and the risks attendant on the signing of a treaty were not discounted.\textsuperscript{68} In contrast, the debate over possible acid rain controls, an issue that would have likely been considered to exist in the realm of gains, was much less in accordance with rational norms.\textsuperscript{69} For these reasons prospect theory is of little

\textsuperscript{67} Stein, 226.

\textsuperscript{68} Benedick (63) notes that a cost-benefit study from the President's Council of Economic Advisors was a major break in the debate within the U.S. administration over possible CFC regulation.

\textsuperscript{69} Reagan administration officials did not systematically evaluate all of the options available on this issue. The way in
help in explaining why the Reagan administration led the way in efforts to regulate CFCs but not in the negotiations on acid rain controls.

This dissertation focuses on a puzzle of environmental decision making by the Reagan administration. As there is currently no theory of preference formation that can explain why one agreement was signed while the other was not it was necessary to "seek particular explanations in particular cases." Therefore, this work draws primarily from theories focusing on domestic or unit level accounts of foreign policy making. Such accounts accord central importance to the receptivity of policy makers to new ideas and to the effects these ideas have on the decision making process. The next section identifies the promising analytical models that are used in this thesis.

IV. Hypothesis One: The Influence of Epistemic Communities

Chapter Three will examine the argument that an epistemic community formed around the issue of ozone depletion and was successful in shaping the decision making process such that the United States signed the Montreal Protocol in 1987. In contrast,

which the administration fired or transferred scientists that supported acid rain controls, or buried unfavourable scientific reports, is documented by Don Munton. Munton, 1983, 18.


no epistemic community advocated the need for regulation of acid rain causing chemicals primarily because the scientific knowledge was not as advanced on this issue. In addition, the community of experts that did exist on acid rain did not possess enough political power to shape the policy making process in this case.

There is some support in the epistemic community literature for this account of how these two cases developed. With respect to ozone depletion, Peter Haas suggests that an epistemic community was able to institutionalize its influence in the United States government and thereby shaped the debate over CFC controls. "Knowledge brokers" gained acceptance of their ideas in the corridors of political power by reacting to a high degree of uncertainty on the part of decision makers.72

While this explanation seems compelling at first glance, Chapter Three will reveal that it has many weaknesses. In particular, it is not immediately obvious, according to an epistemic community perspective, why the United States administration insisted upon the application of very different scientific standards in each case when determining the appropriate time for chemical regulation. On the ozone depletion issue a "positive trigger" was used such that future regulation of CFCs would automatically occur unless scientific evidence suggested that it was not needed. In contrast, the Reagan administration accepted

greater scientific uncertainty and advocated the use of a "negative trigger" in the case of acid rain controls. It argued that no SO₂ regulatory action should be taken unless scientific evidence revealed beyond any doubt that it was required.

Even more damaging to this account of the events is the fact that there is little evidence to suggest that a cohesive epistemic community even existed around the CFC issue. Such a community of scientists cannot therefore claim responsibility for having pushed the United States to create an international treaty. In addition, close examination of the two sets of negotiations reveals that pluralist forces operating in the American political system at the time, including legislative politics and interest group pressure, may have had an important influence on the preference formation of key decision makers. For example, in 1984 a major utility association delivered a report titled "The Politics of Acid Rain" to the White House which calculated the number of votes Reagan risked in the up-coming election by regulating these industries. As well, while the CFC industry came out in support of regulating these chemicals roughly a year before the Montreal Protocol was signed, a powerful coalition of acid rain producers continually

73 Malcolm Gladwell, "Rain, rain go away: Canadians may be outraged by acid rain - but the Americans believe it's all a plot to make them buy Canadian electricity", Saturday Night. Vol. 103, No. 4, (April, 1988), 50.

74 Sebenius argues that Dupont came out in support of international regulation of CFCs only after the prospects for U.S. legislation that would have unilaterally restricted CFC production and use increased significantly following discovery of the Antarctic ozone hole in 1985. James K. Sebenius, "Challenging
opposed the signing of a Canada-U.S. acid rain agreement.

V. Hypothesis Two: The Influence of Interest Groups and Ideas

Chapter Four considers a second hypothesis; one that forges a link between interest group politics and the influence of ideas on policy making. It is argued that the politically powerful stakeholders opposed to acid rain controls (i.e., automobile, utility, coal and miners associations) put intense pressure on the Reagan administration and were successful in shaping the decision making process so that a bilateral acid rain accord was not signed with Canada. The administration officials who did not originally support action on acid rain became less receptive to new information that urged the implementation of NOx and SO2 controls. At the same time, decision makers working to have an acid rain program accepted simply could not overcome the enormous political pressure from the powerful anti-regulation industry associational system.

In contrast, the interest groups representing the CFC industry (i.e., Dupont, Alliance for Responsible CFC Use) supported the


75 The auto industry was opposed to acid rain controls that called for tighter NOx emissions controls. They were largely indifferent to programs that focused exclusively on SO2 reductions.

76 DuPont is included in this analysis of interest groups because it often attempted to represent other actors in the CFC industry during the policy making process. It also was a large
international regulation of ozone depleting substances at crucial periods in the negotiations and, therefore, were instrumental in bringing the Montreal Protocol into existence. This time, officials who initially opposed CFC controls, including Reagan himself, became more receptive to new information about ozone depletion after a "critical event" occurred in 1985 in the guise of the Antarctic ozone hole discovery. Moreover, the removal of industry opposition to CFC regulation, along with increased political pressure from a powerful environmental community, provided a window of opportunity for administration officials in the EPA and State Department that already supported U.S. leadership on this issue. Finally, party politics and activity in Congress combined to affect the decision making process of officials in the Reagan administration on these two issues in such a way that a treaty regulating the production and use of CFCs was signed while an acid rain agreement with Canada was not.

There is much evidence to support this explanation of the events. The importance of the difference in the acid rain and ozone layer associational systems for the evolution of these two cases was captured well in an interview with a key environmentalist active during this time. He stated,

Well, who was the biggest contributor to acid rain? Coal and utilities. Utility companies were all opposed enough corporation that it possessed the resources normally employed by interest groups including access to information, liaison with government officials, mass media relations, campaign contributions and leadership skills. For further discussion see Chapter Four.
to regulation. That's different than having the world's largest manufacturer of CFCs say, 'I think we can have some alternatives in a few years.'

The different levels of political conflict surrounding these two issues also very much affected the openness of decision makers to new information made available by scientists. Industry support of regulation and a lack of regional conflict in the CFC case meant that decision makers in the Reagan administration allowed science to influence policy development. This occurred even though there was little scientific consensus at the time on whether CFCs were responsible for ozone depletion and on the particular effects depletion might have on human beings and the environment. In contrast, there was a much greater degree of scientific consensus on the causes and effects of acid rain. Yet this was evidently not enough to overcome the reluctance of administration officials to regulate SO₂ emissions in the face of intense regional conflict and virulent opposition from the powerful anti-regulation industry coalition. This hypothesis is therefore quite helpful in explaining why the Reagan administration took a leadership role in one case and not the other.

As Chapter Four will detail, however, an understanding of these two cases of environmental decision making requires that one complement the interest group approach by examining other ways that ideas may have affected the respective policy processes. For example, the Bush administration shared many organizational and

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77 Confidential Interview, January 26, 1996, College Park, Maryland.
ideological affinities with the Reagan White House and faced the same leader in Canada. The fact that it was able to sign an acid rain agreement with this country in 1991 indicates the need to join the interest group argument with another account of how these two cases evolved. Such an approach helps to explain why U.S. officials went far beyond the recommendations made by the CFC industry and called for a 95 percent reduction in these chemicals at the international negotiations leading up to the Montreal Protocol.

VI. Hypothesis Three: The Influence of Values

Chapter Five will introduce a third hypothesis: one that investigates the link between the revelation of new ideas through a "critical event" and a shift in decision maker values that affects the policy making process. It is argued in Chapter Five that the normative values associated with environmental degradation and human well-being were evoked quite forcefully and symbolically in administration officials, including the president himself, by discovery of the Antarctic ozone hole in 1985. This "critical event" precipitated a value shift that influenced the decision making process so that the Montreal Protocol was signed in 1987. In contrast, the destruction wrought by acid rain did not evoke these normative concerns to the same degree or intensity. For this reason, as well as because of interest group pressure, the Reagan administration did not sign an acid rain agreement with Canada.
The values hypothesis is a necessary complement to the other two explanations of these two cases of environmental decision making. It is clear that the emphasis of epistemic community theory on ideas and the recognition of the political influence of societal forces in the interest group perspective further our understanding of why the Reagan administration acted so differently in these two environmental cases. Yet, both approaches largely assume that leaders are rational and make decisions on the basis of logical-empirical calculations and fail to recognize that leaders are often motivated by normative concerns. This is an especially serious omission in light of the normative load associated with both the acid rain and ozone layer issues examined in this dissertation. An investigation of the values of key policy makers in the Reagan administration at the individual level of analysis corrects for the theoretical insensitivity to this more closely "human" dimension of decision making behaviour. As such, Chapter Five provides an important missing element in the explanation of why the Reagan administration took a leadership role on CFC controls but not in efforts to reduce acid rain.

VII. Data Collection and Sources

Drawing from a number of theories at different levels of analysis makes it difficult for a comparative case study of social phenomena such as this one to reveal the causal relationships between the numerous variables involved. Although this study
employs the "Most Similar Systems Design" it is still the case that "all we can really learn from rules shaped to fit knowns is that they hold for the cases observed under the whole complex of conditions prevailing when they were observed, not that they hold for all such cases." For this reason generalization of these results to the entire U.S. environmental policy realm would be unwarranted and quite foolish. Concerned with plausibility and not direct causality I can only conclude that in this particular case interest group pressure, new ideas and information and normative values played an important role in the decisions made by the Reagan administration to sign the one agreement and not the other. The argument presented here cannot be considered the "final say" of the events under study. It does however, bring us closer to an understanding of the complex array of factors that operated on the decision makers at this time. It is therefore of great use in

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78 This type of research design is based on the assumption that if important differences are found among systems (or cases) that are similar with respect to as many features as possible then the number of factors to which these differences are attributable will be small enough to justify explanation in terms of these differences alone. Adam Przeworski and Henry Teune, The Logic of Comparative Social Inquiry. (New York: Wiley-Interscience, 1970), 31.

This comparative case study lends itself to this type of analysis because the two systems in question, constituting the context under which each decision was made, are sufficiently similar to permit identification of the variables responsible for the policy outcomes. The two cases are alike with respect to the people who made the decisions, the issue area under investigation, the nature of the international political system and the time frame over which the policies were developed.

delineating some of the strengths and weaknesses of various theories in the International Relations field as they relate to environmental policy making.

In seeking the most plausible account of events I have consulted a variety of sources. For information on the Reagan administration's stated policy on these issues the Congressional Record and the Historical Documents series were used as was Ronald Reagan: Public Papers of the Presidents of the United States. Memoirs written by former Reagan administration officials were helpful in providing an account of the policy making process not captured by the official record. However, these sources must be used with caution so that one may recognize the biases and distortions that are often inherent in the writing of autobiographies. Unfortunately, memoirs written by Reagan himself did not provide many insights because of his greater interest and preoccupation with the more traditional foreign policy issue areas. Of somewhat greater importance for this study were internal government documents such as private letters, departmental memos, workshop papers and summaries, and such. These were quite helpful because they were not created with the immediate thought of public consumption in mind.

Many of the sources noted above do not provide a direct indication of the values that members of the Reagan administration used when responding to the acid rain and ozone layer issues as they developed. For this reason interviews with the relevant officials were pursued. A number of mid-level officials in the EPA
were interviewed as were officials in important environmental groups, corporations, industry associations and in the scientific community. The information garnered from these discussions was invaluable in formulating a complete understanding of why this administration behaved in the manner it did.

As with other sources of evidence, there are limitations associated with the use of interview data. Most significantly I was unable to interview the former president. Also unavailable, regrettably, were senior officials and advisors close to Reagan who might have revealed the normative values that motivated him and other key decision makers. The greatest challenge I faced was in structuring the questions so that the subjects were fully candid about what factors influenced their positions on these two environmental issues. At times it was obvious that some of these people were less inclined to admit that interest group pressure was behind their actions. Indeed, they often argued that normative concern for the environment shaped their decisions. Carefully structured questions did reduce some of this bias as did a reliance on the private statements of decision makers found in letters, diaries, archives, reports of conversations and internal documents. Sarah Mendelson argues that these materials "provide evidence of private arguments if not private thoughts." Moreover, such material is useful since it permits the evaluation of public

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80 Richardson, 171.
rhetoric.\textsuperscript{81}

Investigation of the thrust of interest group advocacy entailed examination of communiques, newsletters, annual reports, editorials, submissions to government committees and scientific reports by the major stakeholders in each case. To ascertain the accuracy and importance of these documents interviews with senior people in the relevant companies or interest associations, such as DuPont, the Alliance for Responsible CFC Policy and Consolidation Coal Company, were conducted.

The inclusion of an epistemic community hypothesis in this study required careful identification of whether a knowledge based network of specialists existed in each case. It also necessitated some knowledge of exactly who the members were and then a determination of each community's principled and causal beliefs before examining their possible roles in decision making. Care was taken in this regard to highlight the source of a member's authoritative claim to knowledge, whether it was based on institutional affiliations, publications in respected journals, or other qualifications. The beliefs of epistemic community members were measured through a detailed study of their early publications, testimonies before legislative bodies, speeches, biographical accounts and, where possible, interviews.\textsuperscript{82}

\textsuperscript{81} Richardson, 171.

\textsuperscript{82} Peter Haas, "Introduction: Epistemic Communities and International Policy Coordination", \textit{International Organization}. 46: (Winter, 1992), 35.
Finally, some measure of the coherency and strength of the beliefs binding the epistemic communities together was made by determining the degree of scientific consensus that existed in each case. Information was gleaned from peer-reviewed scientific journals such as *Science* and *Nature*, from government and agency reports and from private sector and interest association documents to discover whether a consensus had been achieved in either issue and, if so, at what level.

In a comparative case study that incorporates a number of different theories at different levels of analysis it is important to employ different methods of data collection. Every effort has been made to make optimal use of the different sources in this work while taking full account of their shortcomings.

VIII. Theoretical Implications of the Dissertation

This investigation of the Reagan administration's approach to acid rain and ozone layer depletion makes a number of important contributions to the International Relations literature. Generally, by focusing on domestic accounts of foreign policy making this dissertation continues the scholarly movement in this field of study away from structural theories of international politics. Structural approaches, such as neorealism, often "black box" the decision maker and ignore domestic political processes when explaining interstate behaviour. Presently, there are a number of scholars who argue that a greater focus on domestic political processes is required to gain a better understanding of
why state leaders make the decisions they do.\textsuperscript{83} Investigation of why states cooperate with each other or respond to international events as they do requires attention to the effect of state level forces that shape the preferences of decision makers.\textsuperscript{84}

Structural theories often take state interests as given and pay little attention to the preference formation process of individual actors to increase generalization and parsimony. Accordingly, there is a greater need for an examination of the forces working upon the individual decision maker. This investigation of the Reagan administration's response to acid rain and ozone layer depletion therefore borrows from epistemic community theory an emphasis on ideas and knowledge to explain how interest group pressure and value orientation affected the way this administration responded to these two issues. On the ozone layer issue, key officials inside the administration became more receptive to information supporting CFC regulation when industry opposition began to wane. Complementing this greater openness to

\textsuperscript{83} Zimmerman argues that issues involving power, security and prestige are characterized by policy processes described most accurately with the rational actor model. Issues involving the distribution, redistribution or regulation of more tangible goods are characterized by policy processes which involve the interaction of pluralist forces at the domestic level. Patrick McGowan and Stephen G. Walker, "Radical and Conventional Models of U.S. Foreign Economic Policy Making", \textit{World Politics}. 33:3 (April, 1981), 366.

new ideas was the discovery of the ozone hole; a "critical event" that provided the impetus for new scientific knowledge to evoke environmental values in corporate and government decision makers. In contrast, Reagan himself, along with officials in EPA, the State Department and other administrative bodies never became open to information that urged action to control SO2 emissions. Interest group opposition and regional conflict were simply too formidable to permit a change in individual belief systems and there was no major event to shock these officials into emphasising environmental values during the decision making process.

This dissertation also makes some more specific contributions to the International Relations literature. Investigation of these two instances of environmental decision making provides an excellent opportunity to test epistemic community theory, one of the more recent approaches for explaining cooperation between states. The two cases presented here can be considered "critical cases" in this regard as they are science-based and thus most likely to fit this theory. The failure of the epistemic community approach to provide an explanation for the behaviour of the Reagan administration in these cases indicates that serious weaknesses with this theory exist. Most important in this respect is the disregard in epistemic community theory of the role that historical contingency plays in paving the way for consensual knowledge to shape the preferences of decision makers, the underdeveloped conceptualization of the term "scientific consensus" in the literature and the difficult task of defining exactly who was a
member of any epistemic community that may have existed in either the acid rain or ozone layer depletion cases.

While the theoretical formulation provided by a focus on epistemic communities was not found to be helpful, it did invite this researcher to think of the importance of ideas and information in new ways. By opening up new avenues of investigation into the role of knowledge in decision making and specifically its interaction with domestic political forces and individual value systems, the epistemic community explanation has greatly benefited this dissertation.

The findings of this comparative case study indicating that a shift in the values of important state actors affected their approach to the acid rain and CFC issues also reinforces the prevailing critiques of rational actor models of decision making. This study thereby highlights the need to understand, through future research endeavours, what it is that decision makers seek in particular circumstances and how this affects the policy formulation process. It also provides a corrective to cognitive and motivational approaches to decision making by showing how normative/affective factors may actually enhance the policy making process.85 This study then takes the International Relations field one step closer to "rediscover[ing] the human soul."86

There are indications that in the near future environmental issues may constitute the backdrop for a larger number of conflicts that must be addressed by the international community.87 From disagreements involving a few border states over control of shared waterways, to the vast issue of climate change affecting every country on the planet, environmental disputes are sure to loom large for some time to come. Thus, "Multilateral diplomacy will assume a much greater importance. New forms of international cooperation and aid will be needed to enlist developing nations in common efforts to protect the global environment."88 Ultimately, in the not too distant future the role of new ideas, values and interest groups on the behaviour of states in the international political arena may be heightened. So too will be the need to pursue the type of research agenda this dissertation advocates.

IX. Thesis Outline

In the chapter to follow I examine U.S. policy toward acid rain and ozone depletion as these two issues developed during the 1980s. A chronology of important events and a discussion of leadership in the international political system culminates in the argument that the United States did take a leadership role in controlling CFCs but resisted Canadian efforts to conclude a bilateral acid rain treaty. Chapter Three examines the hypothesis

88 Benedick, xii.
that an epistemic community intervened in the debate over ozone depletion and was successful in shifting U.S. policy toward this issue. While this theory is found wanting, the emphasis on ideas is retained and joined with a pluralist framework in Chapter Four. This chapter considers the argument that the Reagan administration reacted to pressure from powerful industry groups opposed to acid rain controls and remained unresponsive to information indicating that SO_2 regulation was required. In contrast, industry support for CFC controls removed an important obstacle for policy makers and helped push the administration ahead on this issue. Chapter Five continues to expand the analysis of these two environmental issues by using the concept of ideas to fill in some gaps of our understanding left by the interest group explanation. It is argued that a "critical event", denoted by the discovery of the Antarctic ozone hole in 1985, evoked values in key administration officials that were conducive to a leadership role on the ozone depletion case. The concluding chapter summarizes the argument and discusses theoretical implications of this study.
Chapter Two - Acid Rain and Ozone Layer Policy, 1981 - 1989

This dissertation is concerned with examining why the Reagan administration became a leader in efforts aimed at creating a regime to protect the ozone layer but did not direct efforts to forge an international regime that would curtail acid rain deposition. Because a coherent, well articulated and detailed definition of leadership is absent from much of International Relations theory, care is taken in the following discussion to make clear what is meant by this concept and then to apply it to the acid rain and ozone layer issues examined in this study.

I. The Main Argument

Leadership, I argue in this chapter, is defined according to specific techniques and mechanisms employed by an actor in the attempt to realize cooperative or collaborative outcomes that change the status quo.¹ At a minimum leadership in the international political system by a state involves a sustained pattern of "acting first" to achieve some collaborative outcome. The three instruments of leadership that present themselves when a state acts ahead of the international community on a particular

¹ By linking this definition of leadership to cooperation it does not become entangled with a tacit notion of what is morally appropriate behaviour in the international community. For example, a country displaying leadership may try to get others to join it and create an agreement that permits greater destruction of the environment. While many would not consider this morally appropriate behaviour, to the degree that this country acted first and had followers it provided international leadership. Cooperation therefore refers less to the achievement of a morally preferred policy outcome in international negotiations and more to the nature of the relationship between a leader and its followers during this process.
issue include intellectual leadership, policy leadership and structural leadership.\(^2\) Additionally, leadership by definition entails followership at some basic level. A state that is considered to be providing intellectual, policy and structural leadership must also be successful in persuading at least some members of the international community to join its efforts in trying to achieve greater international coordination on some matter.

This chapter traces the chronology of important events in the acid rain and ozone layer cases\(^3\) and suggests that the Reagan administration did in fact take a leadership role in the ozone depletion case but not in efforts to create a regime limiting acid rain deposition. Recognition of the different policy responses taken by Reagan administration officials to these two environmental problems then informs an investigation of possible explanations for this puzzle in foreign policy making in future chapters.

II. **International Relations Theory and Leadership**

Realism, the long dominant paradigm in the International Relations field, is virtually silent about leadership as a condition for cooperation or the maintenance of order in the

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\(^2\) This definition of leadership draws from the discussion by Oran Young in his article "Political Leadership and Regime Formation: On the Development of Institutions in International Society", *International Organization*. 45, 3, (Summer, 1991).

\(^3\) For a chronological overview of the important scientific and policy related events in the acid rain case see the acid rain timeline in Appendix C. Also see the ozone layer timeline in Appendix D.
international political system. More emphasis is placed on the dominance accruing to states with the greatest relative capabilities. By virtue of the possession of specific resources such as industrial capacity, military preparedness, and population, states are argued to exist along a continuum according to their relative power. Realists call those possessing the greatest capabilities measured in this way the "Great Powers". Motivated primarily by the need to ensure their own survival, the behaviour of statesmen is largely determined by constant efforts to increase national power. Leadership, for classical realists, is therefore not associated with particular goals states may pursue, or goods and services that may be provided to the system as a whole. Rather, what is important in shaping the relations among states is the dominance and power countries derive from possessing the capacity to overwhelm others with military might.

Another school of realism highlights the order inherent in the relations among states in the international political system. Grotian realism contends that countries exist in an international society that arises from the prevalence and mutual recognition of common interests and rules among the world's states. The Great

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6 Some of the common interests that states have include the goal of preservation, maintaining sovereignty and independence, the limitation of violence and the keeping of promises. Hedley Bull, The Anarchical Society: A Study of Order in World Politics. (London: Macmillan, 1977), xii.
Powers constitute one of several institutions that sustain international order. The others include the balance of power, international law, diplomacy and war.\textsuperscript{7} By managing their relations with one another and "exploiting their preponderance in such a way as to impart a degree of central direction to the affairs of society as a whole", the Great Powers provide a general type of leadership to the international community.\textsuperscript{8}

To the extent that the discussion of international order by Grotian realists highlights the process by which particular states guide the world community towards certain goals, it provides a basis for the definition of structural leadership developed here. However, a notion of leadership that can contribute to an analysis of the two specific cases of environmental decision making under investigation in this dissertation requires a much more specific formulation of this term. It is therefore necessary to move beyond the vague conception of leadership implied by the discussion of international order by this school of realism.

Attempting to examine interstate relations in a more systematic or scientific way, neorealists such as Kenneth Waltz have even less to say about the role of leadership in international affairs than do realists. Like Hans Morganthau, neorealists argue that the great powers of the system are defined by the military and security oriented capabilities that they possess. However, greater emphasis is placed by neorealists on the importance of the anarchical nature

\textsuperscript{7} Bull, xii.

\textsuperscript{8} Bull, 205.
of the system in providing a structure that shapes the behaviour of the different states.⁹ According to the neorealist school, this structure effectively prevents dominant powers from facilitating any type of "benevolent" cooperation or collaboration in which other states in the system may benefit or make relative gains. As Kenneth Waltz argues, "...states have to do whatever they think is necessary for their own preservation, since no one can be relied on to do it for them."¹⁰ Only forms of leadership associated with imperialistic goals such as world domination are captured by the neorealist framework.¹¹ One would therefore expect the Great Powers to take the lead in the creation of alliances in order to maximize their power or to balance the power of other threatening coalitions.

It is with the pioneering work of Charles Kindleberger in the early 1970s that we see the concept of leadership discussed in a much more explicit way.¹² Kindleberger encouraged the thinking of other like-minded theorists, thereby laying the foundations for


¹¹ For example, Waltz (1986, 117) argues that, "A balance-of-power theory, properly stated, begins with assumptions about states: they are unitary actors who, at a minimum, seek their own preservation and, at a maximum, drive for universal domination."

Hegemonic Stability Theory. This theory is based on the premise that the existence of a hegemon or, "a state that possesses a preponderance of material resources"\(^\text{13}\) in the international political system, will ultimately benefit all countries through the provision of "public goods"\(^\text{14}\) such as security and stability. In the absence of a hegemon, disorder and discord in the relations among states would be the norm. In the postwar period the United States set up a number of regimes which were of benefit to other actors on the world stage.\(^\text{15}\) In particular, the United States provided a stable international monetary system, open markets to goods, and a steady flow of capital.\(^\text{16}\)

Kindleberger spends a great deal of time attempting to differentiate between "leadership" and hegemony or dominance,\(^\text{17}\) but has limited success in this regard. At issue is the question of whether the United States should be viewed as a hegemon employing its preponderant power to exploit others through "arm twisting and

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\(^{15}\) Grunberg questions the degree to which these regimes really benefitted all of the world's states when she notes that non-European developing countries may not have enjoyed as many advantages as did other states in the international political system. See Isabelle Grunberg, "Exploring the 'Myth' of Hegemonic Stability", *International Organization* 44:4 (Autumn, 1990), 441.

\(^{16}\) Kindleberger, 189.

\(^{17}\) Young, 1991, 287.
bribery" in order to ward off its own decline for as long as possible or, in more benevolent terms, as a hegemon seeking to facilitate cooperation and collaboration in the state system by providing public goods that simply would not be provided otherwise. Kindleberger seems to accept the validity of both of these views and this prevents him from offering a clear and coherent definition of leadership.18

Subsequent work in the Hegemonic Stability Theory tradition has tended to adopt the more positive notion of hegemony and has therefore associated this notion with the term leadership.19 Accordingly, leadership is argued to entail the provision of public goods by the state possessing preponderant structural power in the system.20 However, the relevance of this debate for any discussion of leadership has recently been put into question. There is growing speculation that the leadership "ability" or structural power of the United States is declining significantly as is this country's "willingness" to manage world order.21 Such discussion

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18 For example, Kindleberger argues that the United States provided "public goods" as a leader in the international political system at the same time that it engaged in "arm-twisting and bribery" to achieve some of its goals. Kindleberger, 1988, 190. Cooper, Higgott and Nossal (1993, 16) note that International Relations scholars have traditionally highlighted a distinction between leadership and headship or dominance. Moreover, they suggest that "... the leadership component of the leadership-dominance dichotomy tends to be inchoately defined." Cooper, Higgott and Nossal (1993, 16).

19 Cooper, Higgott and Nossal, 1993, 15.


21 Kindleberger admitted as much when he asserted that the
has invited speculation about whether some form of order in the international political system could be created and maintained without the active participation of a hegemon. Keohane's widely read book After Hegemony: Cooperation and Discord in the World Political Economy is the first to pose this question in an explicit fashion.

Keohane's work marked an important turning point in the way that scholars in the International Relations field thought about leadership. Specifically, Keohane explored the possibility of untying the concept of leadership from structural power. Eventually, some scholars began considering the possibility that international regimes, defined as "sets of implicit or explicit principles, norms, rules and decision making procedures around which actors' expectations converge in a given area of international relations",\(^{22}\) might foster international collaboration simply through the long-term self-interest of the members of these regimes.\(^{23}\) In addition, regimes might be maintained through the existence of a shared social purpose of

United States is no longer the leader of the world economy and that leadership was hard to detect in the areas of trade, aid, capital movements, and monetary reform. See Kindleberger, 189. Richard Stubbs has catalogued the different ways in which the United States has demonstrated its unwillingness to become involved in the Asia Pacific region since the Vietnam War. See Richard Stubbs, "Reluctant Leader, Expectant Followers: Japan and Southeast Asia", International Journal. 11:5 (Autumn, 1991). Also see Cooper, Higgott and Nossal (1993, 16) as they suggest that there has been a "hiatus" in structural leadership in the international political system in recent times.

\(^{22}\) Keohane, 57.

\(^{23}\) Keohane, 9.
domestic and international authority.\textsuperscript{24} It has even been suggested that regimes may be created or come into existence without the direct efforts of a hegemon. For example, Haggard and Simmons group the literature on regime development into four families. In addition to the familiar structural or power-based explanation they note the game theoretic approach based on rational self-interest, the functional explanation in which regimes spring up in response to fixed needs and also cognitive explanations which see regimes evolving out of consensual knowledge and the learning process of relevant actors.\textsuperscript{25} This type of analysis seems to suggest that cooperative outcomes may be achieved without the involvement of a structural power exploiting others or, without a state providing public goods required to circumvent collective action problems. What then becomes of leadership in the international political system and how are we to conceptualize this phenomenon?

III. The Importance of Leadership in International Relations Theory

There is reason to believe that leadership, whether in the form of arm twisting and bribery or the provision of public goods, will always be important in the efforts by states to create cooperative outcomes. Indeed, some of the studies purporting to demonstrate

\textsuperscript{24} See John Ruggie, "International Regimes, Transactions, and Change: Embedded Liberalism in the Postwar Economic Order", International Organization. 36:4 (Spring, 1982).

\textsuperscript{25} Stephen Haggard and Beth Simmons, "Theories of International Regimes", International Organization. 41:3 (Summer, 1987), 498.
that leadership played an insignificant role in facilitating collaboration among states in particular issue areas draw to a close by bringing leadership back in as a critical variable in their analysis. Peter Haas does just this in his examination of how epistemic community activity led to the creation of the international regime to protect the ozone layer. As his examination of the events leading toward the signing of the Montreal Protocol proceeds, he gradually gives less weight to epistemic community theory as an explanatory variable and ultimately argues that it was largely U.S. leverage and active support that produced this international agreement.26

Similarly, Robert Keohane in his book noted above, somewhat inconsistently combines his main argument that regimes have successfully replaced many of the functions of a world hegemon with the assertion that United States' structural power is required to create regimes in the first place.27 Cognisant of the dangers associated with ignoring the important role a leader can have in facilitating agreement among states, Oran Young asserts that the creation of international institutions actually necessitates the interplay of at least two of the three important types of leadership including policy leadership, structural leadership and intellectual leadership.28


27 Keohane, 13.

28 Young, 1991, 303. These forms of leadership are discussed
Leadership, it seems, will continue to play an important role in shaping the way states interact and, therefore, must be granted an equally important role in the study of interstate behaviour. Yet recent work on the nature of leadership in the international political system has made it clear that the old ways of conceptualizing this phenomenon are no longer sufficient and must change to meet new analytical needs. These insights will inform the way that this concept is defined in this comparative case study.

The first issue that arises in formulating the new definition of leadership concerns the ontological status of this concept. That is, are we to regard the actors involved in the leadership process as collective entities under the influence of structural determinants, or rather, as individuals that possess significant autonomy? In other words should we focus on state (national) leadership or political leadership? The answer to this question partly depends on the goals of the research project but primarily on one's judgement about what the leadership process ultimately entails.

Oran Young makes a good case for viewing leaders as individuals and studying their behaviour to understand their impact on institutional bargaining. He disparages hegemonic and structural theories\(^{29}\) for diverting attention away from the important role in greater detail later in this chapter.

\(^{29}\) See Kenneth N. Waltz, *Theory of International Politics.* (Reading: Addison Wesley, 1979).
that individual actors play in facilitating cooperation among states. This criticism is supported by Martin Hollis and Steve Smith who argue that, "structures merely 'shape and shove', thus leaving room for some contribution to outcomes by the units of the system." More specifically, "social structures acquire their causal efficacy only through the medium of practical consciousness and action." A definition of leadership that confines itself to the systemic or collective level of analysis necessarily overlooks the most important determinant of foreign policy decision making - the individual actor. Oran Young therefore suggests that by viewing individuals as leaders one can more accurately judge the contribution made by leadership on regime formation. It is this view that provides the basis of the definition of leadership employed in this study.

However, Robert Putnum's recognition and exploration of the complexity of institutional bargaining suggests the necessity of including in our definition of leadership domestic level variables. Leaders are not totally autonomous individuals but rather must respond to pressures emanating from the domestic level and from the push and pull of the bargaining process itself.

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30 Martin Hollis and Steve Smith, Explaining and Understanding International Relations. (Oxford: Clarendon Press, 1990), 143.


Moreover, parties and groups within countries trying to shape international negotiations often view leaders as representatives of collective entities (the state) as do other participants in the international bargaining process. Much of the power, credibility and authority that leaders, as individuals, possess, arise from this form of recognition. For this reason it is unwise to focus only on the political leadership of individuals and ignore that aspect of their behaviour that is dictated by their recognition (sometimes self-recognition) as national leaders. And while we must not abide by structural theory’s tendency to ignore the individual, it is necessary to recognize, as noted above, that systemic constraints can shape the decisions that leaders as individuals make. Ultimately, "...the sources of leadership in global politics are both systemic and domestic. However, while systemic strain may prompt policy responses or initiatives, domestic actors are the primary source of such initiatives or responses."33 Ontologically this may be an uneasy balance, but it is one that will provide a much more compelling and full understanding of the two sets of environmental negotiations under study here.

The changing character of international relations between states in the late twentieth century also demands a change in the way we conceptualize leadership in this field. In particular, there seems to be a need for more flexibility in how we define this term. Greater interdependence in the international political

33 Cooper, Higgott and Nossal, 1993, 13.
milieu spurred on by rapid technological advances has precipitated a change in the global agenda. As Cooper, Higgott and Nossal argue, "Whereas 'high' policy issues - the first agenda of international relations - were dominant in the 1950s and 1960s, 'low' policy issues were ascendent in the 1970s, the 1980s and early 1990s." While states have devoted less of their time and resources to military/security issues in the last few decades, they have begun to focus more on economic issues and social concerns such as environmental degradation and human rights abuses. In turn this has precipitated an expansion in the forms, sources and techniques of leadership. It is difficult therefore to conceive of leadership on an environmental issue as stemming only, or even primarily from, structural power. Instead, a state's ability to conduct research on an issue and bring the results to the attention of the world community may be of greater importance to the final policy outcome. Likewise, in the absence of structural power the use of highly developed negotiation skills to forge agreement among several disparate actors may be the most appropriate form of leadership to employ.

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34 Cooper, Higgott and Nossal, 1993, 21.

35 Cooper, Higgott and Nossal, 1993, 21. Gilpin, a supporter of Hegemonic Stability Theory, acknowledges that regimes governing international commerce and technical cooperation are the most important in modern times. See Gilpin, 1981.

36 The importance of negotiation skills in facilitating cooperation is highlighted by the fact that actors involved in international negotiations most often operate under a unanimity rule rather than a majoritarian rule when making decisions. Agreement is therefore often more difficult to achieve than in most domestic settings. Young, 1991, 283.
Thus, while leadership is still an important aspect of interstate behaviour, the definition of this term must be expanded to account for the changing nature of relations between the world's states. The discussion to follow first specifies the contents of the term "leadership" used in this study. It then traces the chronology of important events in the acid rain and ozone layer cases and presents evidence which suggests that the Reagan administration did in fact take a leadership role on ozone controls but not in efforts to create a regime limiting acid rain deposition.

IV. Leadership Defined

Leadership is divided here into different forms according to the important mechanisms or techniques employed by the state regardless of whether the desired ends are actually achieved. This allows for the possibility that a state may take a leadership role, defined in terms of process, but fail to achieve a specific policy outcome. With respect to the study at hand, using this new definition allows one to avoid falling prey to post hoc reasoning and incorrectly arguing that because the United States did not support the creation of an acid rain regime it could not have taken

Oran Young (1991, 286) highlights the dangers associated with linking the definition of leadership with specific policy outcomes when he states, "by conflating leadership with success in the formation of regimes, such reasoning effectively precludes the development of propositions dealing with the relationship between the activities of leaders on the one hand and the outcomes of institutional bargaining on the other." Also see Michael Zurn, "The Rise of International Environmental Politics: A Review of Current Research", World Politics. 50, (July, 1998), 626.
a leadership role in these negotiations. Indeed, when one allows for greater variation in the ends towards which leadership may strive, it becomes necessary to investigate the possibility that the United States lead the process that characterized acid rain negotiations even if, while doing so, it pushed for less governmental regulation of the chemicals polluting the atmosphere.

Keeping with the thrust of much of the recent literature on leadership, the only end or goal which is explicitly linked to the process component of the definition used here is cooperation. Leadership, therefore, is defined according to specific techniques and mechanisms employed by an actor in the attempt to realize cooperative or collaborative outcomes that change the status quo. As such, it is not enough for a leading state to simply prevent the creation of a regime in the international community. Rather, leadership often entails the expanded use of government powers to get all relevant actors onside in an attempt to achieve a collaborative outcome. Success in these efforts may be one indication of leadership but it should not be conflated with the more important process component of this concept.

At a minimum leadership in the international political system by a state involves a sustained pattern of "acting first" to achieve some collaborative outcome. Leaders "provid(e) the intellectual and political energy to trigger and, in that sense, take the lead in gathering followers around it."38 There are three instruments of leadership that present themselves when a state acts

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38 Cooper, Higgott and Nossal, 1993, 24.
ahead of the international community on a particular issue. Specifically, leadership is defined here as occurring when state decision makers exhibit the following behaviours in an effort to achieve shared gains in international negotiating processes: policy leadership, intellectual leadership and structural leadership. As noted above, a state may be said to have taken a leadership role even if the specific policy goals are not ultimately realized (i.e., an international agreement is not signed). Nevertheless, leadership by definition entails followership at some basic level. A state that is considered to be providing intellectual, policy and structural leadership must also be successful in persuading at least some members of the international community to join its efforts in trying to achieve greater international coordination on some matter. Recognizing when leadership has occurred therefore involves providing evidence that a state "acted first" using these three instruments well as indications of followership. Before focusing on the role that the Reagan administration played in efforts to address acid rain and ozone layer depletion, the next section of this chapter examines the three types of leadership in greater detail.

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a. **Policy Leadership**

A state offering the international community policy leadership will often initiate political discussions and impart direction to other states on some matter.\(^40\) This will often require a country to raise the issue first, host international meetings, set the agenda at the discussions, and possibly take the initiative and adopt unilateral action as a policy response. By starting the diplomatic process the leader indicates to other parties the seriousness of the issue and thereby shapes the way in which the issue is perceived. Much of the effect of policy leadership derives from its symbolic function in that the leader state often explicitly provides the international community with a model for emulation.\(^41\)

While similar to intellectual leadership in that it changes the way actors think about the issues and suggests possible solutions to problems, policy leadership often transcends the realm of discussion and proposal by setting a standard of concrete action which others are urged to follow or support. In this sense leadership connotes performing some task that would otherwise not

\(^{40}\) The definition of policy leadership expounded in this chapter draws from the discussions of leadership provided by David P. Rapkin, "Japan and World Leadership?", in David P. Rapkin, *World Leadership and Hegemony*. (London: Lynne Rienner Publishers, 1990) and Cooper, Higgott and Nossal, 1993. It also incorporates aspects of Oran Young's notion of entrepreneurial leadership. See Young, 1991.

be provided to the international community. This may entail providing public goods so as to circumvent collective action problems, which often serve to hinder the attainment of cooperative outcomes.

The most important manifestation of policy leadership in the integrative bargaining process is institution-building. Leaders partake in institution-building when they adopt concrete measures to create formal institutions or regimes and impart in them certain conventions or norms. This form of leadership stems from the ability of an actor to employ negotiating skills to frame issues in a manner that facilitates the creation of cooperative agreements. In an effort to shape integrative bargaining along collaborative lines leaders focus attention on the importance of certain issues and shape the negotiating agenda by highlighting the costs of various policy responses and identifying relevant actors and their interests. After suggesting innovative policy options to overcome the difficulties associated with bargaining among many parties, policy leaders make deals and foster coalitions around chosen options. They may attempt to mobilize domestic and transnational groups in an effort to build such coalitions. The requirements of institution-building ultimately see leading states set up a

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44 Young, 1991, 293.

45 Young, 1991, 291.
division of labour, provide the apparatus responsible for monitoring problems and establish a secretariat or bureaucracy.

b. Intellectual Leadership

The intellectual leader "...produces intellectual capital or generative systems of thought that shape the perspectives of those who participate in institutional bargaining..." New ideas offered by these leaders serve to change the way in which the issue or problem under negotiation is perceived. Ideas often shape the salience that decision makers attach to certain issues, the causal mechanisms offered in understanding the nature of the issues, and proposals deemed necessary to address them.

Ultimately, as Oran Young notes, new ideas must supersede the old worldviews held by policy makers in order for intellectual leaders to have any effect on the institutional bargaining process. The acceptance of new world views by decision makers may take months or even years but the effects of this type of leadership may outlast the people who introduced the new generative system of thought in the first place.47 Intellectual leadership will be expected to have the greatest effect in situations where the parties involved have limited knowledge about the issues at hand or face great uncertainty about the effects of various policy responses.48 This is often the case with problems associated with

46 Young, 1991, 298.
47 Young, 1991, 298.
48 Judith Goldstein, Ideas, Interests and American Trade
environmental degradation.49

c. **Structural Leadership**

The final category of leadership used in this comparative case study is structural leadership. Because military and economic force is often employed by state actors to achieve their goals, any definition of leadership must encompass this element of state behaviour. It may be the case, as argued above, that relative capabilities are now less likely to come to the fore in relations among states because of a recent shift in the agenda of many countries. But to assume that this important variable no longer has any place in a discussion about international leadership is unwise. In the environmental and social policy realms the threat or use of military and economic power by decision makers still has the potential to help determine the outcome of institutional bargaining, even if it is not the dominant mode of leadership

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49 Determining whether the United States was an intellectual leader in these cases was a more difficult task than looking for evidence of policy leadership. Tracing the path of new ideas and generative systems of thought through the process of institutional bargaining is daunting. This study examined the chronology of events in these two cases for the following measures of intellectual leadership: the degree to which U.S. negotiators offered information (e.g., scientific data or models) about the problems at hand so as to increase understanding, the amount of scientific and information resources the United States devoted to understanding the issues, the degree to which U.S. policy makers permitted the free flow of ideas and encouraged advice from scientists, the involvement of U.S. scientists on the important scientific committees and the extent to which these scientists and government officials attempted to convince others of the validity of their ideas.
employed. By using the possession of material resources to acquire bargaining leverage states sometimes employ structural leadership during international negotiations.

Leaders convert material resources into bargaining leverage in various ways. Most importantly, a leading state may engage in "arm twisting and bribery" by threatening to stall the bargaining process unless it is permitted to shape negotiations as it desires. In addition, it is not uncommon for states to use the leverage derived from their greater economic and military capabilities by offering side-payments to recalcitrant states, by linking issues together to provide incentives for accommodation, and by threatening to punish other countries if they do not change their preferences in specified ways. Historically, the United States obtained much influence as the world's predominant economic power by providing its partners with a stable international monetary system, access to oil at stable prices and an open market for goods produced in other countries. As the relative strength of the American economy has waned over the last two or three decades so too has the influence it once derived in this way. However, as a later section will demonstrate, the ability of this country to translate its economic and military might into bargaining leverage over other countries in the international community is still significant.

50 Kindleberger as quoted by Young, 1991, 289.
51 Young, 1991, 289.
52 Keohane, 139.
Because policy leadership corresponds most closely with "acting first" to create cooperative outcomes, and since intellectual and structural activities tend to support this more central process, policy leadership is considered the primary form of leadership in this study. Intellectual leadership often precipitates diplomatic efforts by providing decision makers with information that suggests some form of action on an issue is required. In addition, structural leadership is often employed during the later stages of international negotiations by the leader state to persuade or compel others to support the final agreement. Accordingly, these two types of leadership, while quite important, are not as fundamental to inter-state relations as is policy leadership.

Both in theory and in practice the different instruments of leadership a state may pursue are often difficult to differentiate from each other. The separation between these various categories can be especially blurred when trying to measure them in a particular case. For example, leaders engaged in actual negotiations may use two or three of the different instruments of leadership to facilitate the achievement of cooperation among states. As such it is not uncommon for a leader to support the introduction of his or her new ideas with bargaining leverage derived from structural capabilities or with advanced negotiating skills. Moreover, in certain cases policy leadership may be futile if it is not buttressed with structural leadership or with the introduction of new generative systems of thought. In practice, Young, 1991, 305.
the partial overlapping of behaviours which constitute the different categories of leadership need not hinder efforts to determine if the United States took a leadership role in the acid rain and ozone layer negotiations. Accepting that some overlap is inevitable, care will be taken later in this chapter to trace the U.S. role in these issues by providing specific measures of the three different forms of leadership.

V. United States as International Leader

There is much debate among observers of international relations about the current ability and willingness of the United States to provide international leadership on the world stage.54 According to these two basic properties of a leader, most scholars agree that the United States has experienced significant decline since its peak immediately after the Second World War.55 It is therefore important to ask whether this country even had the requisite

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In contrast, Bobrow and Boyer note that in the post-cold war era “the end of the Soviet threat removes from United States domestic politics an almost automatic justification for contributing to the maintenance of the international system.” Davis B. Bobrow and Mark A. Boyer, “International System Stability and American Decline”, International Journal. (Spring, 1998), 288.

structural resources (ability) and willingness to lead the international community in cooperative endeavours during the time that Reagan was in office. For if the United States did not have the ability to provide direction to the international community at this time, the question of whether it took a leadership role in either the acid rain or ozone layer cases is moot.

A close examination of the relative power resources of countries in the international political system during the 1980s reveals that the United States did possess the ability to lead efforts to create a CFC or acid rain regulatory regime. Accounting for more than one fifth of global economic output in the 1980s the United States was by far the largest economy in the world. This measure of power is especially relevant for the CFC case. The United States obtained leverage during these negotiations because it was home to the world's largest CFC producer (DuPont) and possessed a huge domestic market for CFC related products.

In addition, the United States was out in the forefront internationally in its development of science and technology resources during the Reagan years. In his repudiation of the idea that American decline has been precipitous and continuous, Joseph Nye notes that this country has been one of the fastest to adopt an


57 Bruce Russett argues that scholars have been too quick in suggesting that the economic hegemony of the United States has waned. Bruce Russett, "The Real Decline in Nuclear Hegemony", in James N. Rosenau and Ernst-Otto Czempiel, Global Changes and Theoretical Challenges. (Lexington: Lexington Books, 1989), 177.
information-based economy. Given that manufacturing and services in the information industry are becoming more important indicators of power, the rapid transition of the U.S. economy along these lines is important indeed. The fact that the acid rain and ozone layer depletion problems were so intertwined with the latest science and technological advances meant that the possibility existed for the United States to garner much authority, legitimacy and influence as a scientific leader during these negotiations.

On the military front, American nuclear hegemony was eventually eliminated by the 1970s. However, given that the United States and the former Soviet Union together accounted for fully 60 percent of world military expenditure until 1980, a time when Reagan actually started to increase military outlays, it is clear that the United States remained a "superpower" in the security realm during the 1980s. There is little evidence that U.S. military superiority played a significant role in the international negotiations on these two environmental issues. But as a general indication of hegemony, this measure of national power does suggest that the United States did have the ability to be an international leader in the 1980s.

The question of whether the United States possessed the willingness to be a leader on the world stage while Reagan was

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58 Nye, 8.
59 Nye, 8.
60 Russett, 177.
61 Nye, 85.
president involves a more subjective determination and, therefore, is more difficult to answer. In their analysis of the seven-power summits, Robert Putnum and Nicholas Bayne argue that the unwillingness of the United States to provide world leadership after 1970 created the need for a new form of collective management among the world's major industrial powers.\(^{62}\) The seven-power summits therefore provided an important international coordination and integration function that the United States was increasingly reluctant to provide. However, Putnum and Bayne also note that the United States, with varying degrees of success, often asserted strong leadership within the confines of the summit process.\(^{63}\) Evidently, the Reagan administration did retain the willingness, on particular issues, to provide the required leadership to achieve interstate coordination and cooperation. Therefore, during the 1980s the United States certainly possessed the ability to be a leader in world affairs, especially on environmental issues which required fewer power resources. On occasion, it also demonstrated the willingness to do so.

The following discussion examines the chronological histories of the acid rain and ozone depletion issues and identifies the occurrence of specific events or behaviours associated with

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\(^{63}\) Putnum and Bayne, 272. For example, the United States lead the way to a cooperative agreement over proposed American missile deployments at the Williamsburg summit in 1983. Similarly, American efforts helped create agreement on terrorism during the 1986 Tokyo summit. Putnum and Bayne, 272, 273.
international leadership. The evidence presented suggests that the Reagan administration did in fact take a leadership role in the CFC case but not in efforts to create a regime limiting acid rain deposition.

VI. Leadership Chronology

a. Pre-1981

In both the acid rain and ozone layer cases there are indications that the United States took a leadership role prior to the arrival of the Reagan administration in Washington in 1981. This country, with its large base of scientific and information resources, invested much money in efforts to understand and find solutions to these two environmental problems before this time. Under Carter the United States initiated, or participated in, a number of major research programs to study the causes and effects of acid rain and to develop strategies to deal with this problem. In particular, this administration embarked upon a major scientific study with Canada (released in February 1983) in 1980 when the Memorandum of Intent was signed. Early lobbying by the Carter administration also resulted in the signing of the National Acid Precipitation Act in 1980 creating the massive National Acid Precipitation Assessment Program (NAPAP) which would end up

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committing over $300 million to scientific research before concluding in 1988.\textsuperscript{66}

With respect to the CFC issue, the United States pioneered research into the possible modification of the ozone layer by man-made chemicals. Creation of the Committee on the Inadvertent Modification of the Stratosphere (IMOS) to assess ozone damage in 1975 was followed by several studies by the top scientific institutions in the country including the National Academy of Sciences (NAS), the National Aeronautics and Space Administration (NASA), the National Oceanic and Atmospheric Administration (NOAA) and the National Centre for Atmospheric Research (NCAR).

While the United States moved beyond intellectual leadership and took unilateral action to reduce its production and consumption of CFCs, its policy leadership record on acid rain was mixed. On this front the U.S. administration seemed to respond to Canadian actions as often as it was the initiator in this process. Having participated in early discussions with Canada on this issue,\textsuperscript{67} President Carter in 1979 called it "a global environmental problem of the greatest importance."\textsuperscript{68} However, much of the subsequent


\textsuperscript{68} James L. Regens and Robert W. Rycroft, The Acid Rain Controversy. (Pittsburgh: University of Pittsburgh Press, 1988),
pressure to conclude an acid rain treaty came from Canada. Canada really began to push the acid rain issue with the appointment of John Frazer as federal Environment Minister in 1979. Making acid rain a top priority, Frazer initiated a series of meetings with senior governmental officials in Canada and the United States.69 Negotiations between these two countries led to the signing of the Statement of Principles in 1979 which recognized the obligation of both countries to control transboundary air pollution. These obligations were outlined further in the Memorandum of Intent, signed on August 5, 1980, that formally committed the governments of Canada and the United States to negotiate a bilateral air quality agreement and to begin negotiations no later than June 1, 1981. The agreement also required that each country take interim action to reduce acid rain deposition while the negotiations took place.70

In addressing concerns over possible depletion of the ozone layer the United States took unilateral action to reduce its production and consumption of ozone destroying chemicals. Having


70 Carroll, (1983, 263). During this time the Carter administration failed to provide a model for emulation for other countries including Canada. After signing the Statement of Principles this administration responded to concerns about energy self-sufficiency by announcing a program in 1980 to convert 107 power plants from oil to coal. The Environmental Protection Agency also reduced air pollution controls on existing power plants that burned coal. Clarkson, 187.
hosted one of the two major international meetings on ozone depletion in 1977, the Environmental Protection Agency (EPA) and Food and Drug Administration (FDA) jointly announced that a phase-out of nonessential CFCs was to be in effect by December 15, 1978.\textsuperscript{71} The United States was the only country in the world at this time to take such concrete action. It therefore provided a model for other countries to emulate. After deciding to delay regulations of nonpropellant uses of CFCs in February of 1978, U.S. officials, at an international meeting in Oslo in April of 1980, went further than other nations that were calling for CFC reductions and announced their intention to freeze CFC production at 1979 levels.\textsuperscript{72} Then, in October of 1980, the EPA released the Advanced Notice of Proposed Rulemaking (ANPR) which proposed the phase-out of nonaerosol CFCs.\textsuperscript{73}

Therefore, the Carter administration took an intellectual and policy leadership role in its efforts to respond to concerns about possible ozone layer depletion and, to a lesser extent, in its negotiations with Canada to address the acid rain problem. Policy leadership was sometimes not forthcoming from Washington on acid rain but there was always the commitment to remain engaged in this


\textsuperscript{72} Roan, 102.

\textsuperscript{73} Roan, 103. Nonpropellant or nonaerosal CFCs refer to, but are not limited by, the following list of uses: refrigeration and air conditioning systems, rigid insulation foams, cleaning agents and solvents, and medical sterilants.
issue and to participate in constructive efforts to tackle it. Moreover, with respect to acid rain, "...for the Carter administration, better science was needed, but generating a more complete knowledge base was not to be used to delay policy responses."  

Upon coming to power Ronald Reagan dramatically shifted the approach the United States took towards these two issues. The early 1980s witnessed a lack of policy, intellectual and structural leadership by this country on both of these issues; a policy approach, it is argued, that continued to characterize the acid rain case until Bush arrived in Washington in 1989.

b. 1981-1983

Reagan and his entourage brought to the White House a strong belief that reversing American economic decline required limiting government regulation in areas such as the environment.  

Fewer government regulations would remove obstacles which had prevented American industry from becoming as competitive and productive as possible. Environmental protection was therefore viewed by this administration as fundamentally at odds with economic growth and prosperity.  

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74 Regens and Rycroft, 119.
75 Roan, 87.
i. Acid Rain Negotiations

Even though Reagan, in 1981, promised to honour the Memorandum of Intent signed with Canada,\(^77\) he proceeded to undermine whatever measures had been taken by the previous administration towards finding a collaborative solution to this problem with Canada. Moreover, the United States at this time repeatedly refused to become part of any international regime that proposed significant reductions in the chemical emissions that cause acid rain.\(^78\)

By appointing the former corporate lawyer Anne Burford as EPA administrator, Reagan effectively halted any policy or intellectual leadership that had, in the past, characterized the EPA's approach to this issue. Burford revealed the extent of her willingness to approach this environmental problem from new perspectives by the fact that she would not even use the words "acid rain" to describe this phenomenon while she was the head of this agency. Instead, she insisted on using the phrase "unbuffered precipitation."\(^79\) Few other policy makers or scientists followed the EPA administrator and adopted the meaning system that she attempted to associate with this environmental issue.

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\(^77\) Wilcher, 25.

\(^78\) Further explication of the role that the United States played in these international negotiations will occur later in this chapter.

\(^79\) Interview with Elizabeth Barratt-Brown, January 30, 1996, Washington, D.C. Elizabeth Barratt-Brown is a staff attorney with the NRDC.
Other more important deficiencies marred the possibility of the United States displaying any intellectual leadership role after Reagan came to office. Because the acid rain and ozone layer issues were so intimately linked to scientific knowledge, all parties, including administration officials, acknowledged that the monitoring and resolution of these issues could only occur through the scientific enterprise. However, the Reagan administration proceeded to cripple that enterprise in these two cases, thereby demonstrating a lack of intellectual leadership. For example, the openness of the administration to new information and ideas concerning acid rain processes was put into question by its tendency to interfere with the collection, review, distribution and debate of new scientific research. On several occasions funding for scientific projects was withdrawn before the studies were finished, often because of a dissatisfaction with preliminary results that indicated action should be taken to decrease acid rain damage. In June of 1982, officials in the administration slashed funds to the National Academy of Sciences for acid rain research after this scientific body suggested the EPA should consider implementing restrictions on SO$_2$ emissions.\footnote{Chris C. Park, \textit{Acid Rain: Rhetoric and Reality.} (London: Methuen, 1987), 203.} Then, in December of 1983, the EPA reduced the budget for the Advanced Utility Simulation Model Project by nearly 80 percent, from $650,000 to $150,000. The move to reduce the scale of this study came at the same time that preliminary findings were suggesting that midwestern
utilities were responsible for acid rain.\(^{81}\)

More seriously, from the beginning of Reagan's first term in office, and the arrival of Anne Burford as the administrator of the EPA, came the firing of scientists knowledgeable about acid rain.\(^{82}\)

One mid-level government official that peer reviewed the interim NAPAP scientific report of 1987 stated that the Reagan administration "had a hit list of scientists..."\(^{83}\) According to a leading American scientist involved in the study of acid rain since the mid-1970s, the efforts by officials in the EPA and other departments and agencies to stifle certain types of information became so aggressive that during the release of this report most scientists would not talk to science reporters for fear of losing their jobs or research grants.\(^{84}\) Finally, efforts by the administration to suppress undesirable information and ideas reached absurd levels in March of 1982 when the U.S. Justice Department invoked a rarely used law from the 1930s and ordered that two Canadian films on acid rain be labelled "political propaganda."\(^{85}\)

\(^{81}\) "A Reprieve for Acid-Rain Work", Philadelphia Inquirer. (January 17, 1983).


\(^{83}\) Confidential Interview, January 24, 1996, Washington, D.C.

\(^{84}\) Confidential Interview, January 12, 1996, Millbrook, New York.

\(^{85}\) Park, 1987, 206.
The simple fact that the Reagan administration was unable to convince the majority of scientists, interest groups, the American public and officials in other countries (including Canada) that acid rain was not an important environmental problem suggests that it did not take an intellectual leadership role on this issue. Unsupported by scientific evidence, the idea provided by the administration that too little was known about the causes and effects of this problem to take action was never accepted outside of the White House. Especially after 1981 or 1982 this argument was routinely criticized. Indeed, the resistance to the information provided by these government officials, and Reagan himself, was so intense that the administration became a follower in this regard and eventually conceded that acid rain did exist as an important environmental problem that needed to be dealt with. Intellectural leadership was clearly not a pillar of U.S. policy on acid rain deposition.

Anne Burford's efforts to remove acid rain from the EPA's list of priorities were buttressed by other measures taken by the administration that demonstrated a complete lack of policy leadership. The United States certainly did not provide a model for emulation through the actions it took shortly after Reagan came to office. By slashing the EPA's budget this administration "dramatically altered the federal government's capability to implement environment protection programs." The Reagan

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86 See Chapter Three.

87 Henry C. Kenski, "The President, Congress and Interest
administration also drafted a number of amendments to the Clean Air Act (CAA) that would have taken the teeth out of this legislation. For example, in 1981 Reagan supported changes to the CAA that would have removed the duty of the federal government to identify air pollutants for which standards must be set, thus allowing states to set their own schedules. Had they been adopted, the proposed changes also would have done away with existing controls in areas where clean air had already been achieved. Moreover, the new regulations would have increased acid rain by permitting higher amounts of emissions from automobiles and electrical generating plants. Reagan also supported efforts to repeal Section 115 of the CAA which required the EPA to make states curb pollution that harmed another country. One year earlier the Carter administration accepted that Section 115 applied to the acid rain problem. Such efforts by the new administration to undermine the bilateral institutional bargaining process with Canada and prevent the adoption of pollution controls, were viewed by most knowledgeable observers in the media, non-governmental organizations, Canada and even by some administration officials as constituting a definite lack of international leadership.

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88 Ridgeway, 181.
90 For example, mid-level officials in the NRDC, NAS, and EPA, along with Canadian and American scientists agree that the United States did not take a leadership role on the acid rain
ii. Ozone Layer Negotiations

During the 1981-1983 time frame much the same can be said with respect to the policy approach taken by the administration towards possible depletion of the ozone layer. With Burford at the helm, the EPA adamantly refused to consider the possibility of domestic regulation of nonaerosol CFCs. In fact, this agency effectively ignored regulation of these chemicals at the domestic level for close to three full years by disregarding the requirements of the ANPR issued in 1980 and by refusing to issue any official statements on ozone layer policy during this time. This silence only came to an end after Alan Miller of the Natural Resources Defence Council (NRDC) instigated legal action to get the EPA to rule on the ANPR.91

91 In October of 1980 the EPA released the Advanced Notice of Proposed Rulemaking calling for a cap on the production of CFCs at current levels. Alan Miller of the NRDC argued that the EPA was "legally obligated to take some regulatory action on the basis of the scientific conclusions stated in the ANPR or, in the alternative, publicly state its reasons for concluding that a threat to human health and the environment no longer exists." Alan Miller, "Letter to William Ruckelshaus", U.S. Environmental Protection Agency, (Washington, D.C.: May 31, 1983). When the EPA failed to take such action the NRDC took the EPA to court in November of 1984 to enforce this obligation.
The United States adopted the position in the early 1980s that before it took further action to control CFCs, other countries should be required to at least ban CFCs in aerosols as it had already done this some years before. However, in keeping with the view of administration officials (e.g., Burford) that any future regulation of CFCs should be international in scope, the United States did participate in seven international meetings addressing ozone depletion from 1982 to 1985 coordinated largely by the United Nations Environment Program (UNEP). Consequently, some of the intellectual leadership that characterized U.S. policy in the mid- to late-1970s under Carter continued during this time, albeit at a lower level of intensity. In May of 1981 NASA, NOAA and FAA of the United States sponsored the NASA/WMO Stratospheric Ozone Workshop held in Hampton, Virginia, which gathered together 100 of the world's top scientists to increase understanding of ozone depletion processes. Then, in 1982, the EPA, NOAA, WMO, and members of the CFC industry began a two year study of ozone depletion.

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processes. The EPA also contributed partial funding to a study coordinated by the OECD which explored the economic consequences of altering the ozone layer.\footnote{95}

Apart from this sporadic intellectual leadership, the Reagan administration from 1980-1983 let other actors in the international political system take the lead on the CFC issue. Indicative of this policy response, the Reagan administration answered the call for a ban of CFCs, outlined in the Nordic Annex Draft Protocol of April 1983, by arguing that such action would be premature because of scientific uncertainty.\footnote{96} It was however, not long after this rejection of the proposal from the Nordic countries that the United States gradually became much more of a policy leader in the international talks on this issue. Indeed, as a close examination of the events demonstrate, by 1985 or 1986, the United States was guiding the formulation of CFC regulatory policy at the international level while displaying intellectual and structural leadership.

c. 1983 - 1989

i. Ozone Layer Negotiations

In 1983 Anne Burford was replaced by William Ruckelshaus as administrator of the EPA in an effort by Reagan to boost the

\footnote{95}{"Report to Congress on the Progress of Regulation to Protect Stratospheric Ozone", U.S. Environmental Protection Agency, (Washington, D.C.: April, 1983), 18.}

\footnote{96}{Rob Blake, "Memorandum to Alan Miller, Tom Stoel, Jessica Mathews, and Irving Mintzer", (Washington, D.C.: World Resources Institute, October 12, 1983).}
standing of this agency in the eyes of a public that supported many environmental causes. Ruckelshaus was more open than was Burford to the use of government regulation in order to protect key environmental resources. The arrival of the new administrator provided a window of opportunity for mid-level officials in the EPA who were increasingly concerned about possible ozone depletion and desired to shift U.S. policy on this issue. With the transfer of authority over CFC policy from the Toxics Office to the Office of Air and Radiation in 1983, officials including John Hoffman, Eileen Claussen and Steve Seidel took a policy leadership role and began coordinating a more aggressive approach to this environmental problem. Scientists were invited to meetings with EPA officials during 1984 and 1985 where they were asked to reconsider the assumptions about the future growth of CFCs that had underpinned their projections of ozone depletion in the past. Efforts were also made to make industry a partner in this process. To build a coalition of support for CFC controls at the domestic level, the EPA conducted numerous workshops with officials and scientists from DuPont and other major CFC producers and users during this time.

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97 Interview with John Hoffman, January 22, 1996, Washington, D.C. Hoffman was head of the Stratospheric Ozone Task Force at the EPA.

98 These efforts persisted throughout the 1980s. For example, in 1987 the EPA offered joint-testing programs of CFC substitutes with industry and offered to collaborate with the Department of Defence in its efforts to replace the halons used in its fire extinguishers. "Meeting on Stratospheric Ozone Depletion Regulations", U.S. Environmental Protection Agency, (February 18, 1987). As well, in the same year, the EPA, in cooperation with The Society of the Plastics Industry Inc., planned a technical conference and trade fair for discussion about CFC alternatives.
Eventually, trust ties and mutual respect began to develop among the participants of these workshops.\textsuperscript{99}

An important shift in the U.S. position on CFC controls occurred when, in September of 1983, the EPA sent a letter to the State Department indicating that this agency supported Article One of the Nordic Annex proposal.\textsuperscript{100} At a UNEP sponsored meeting in Geneva in October of the same year, State Department officials therefore announced U.S. support for the proposed UNEP Global Framework Convention for Protection of the Ozone Layer including an integral protocol requiring parties to ban nonessential CFC aerosol uses.\textsuperscript{101} While this announcement fell short of indicating support for both parts of the Nordic Annex proposal, it did have the effect of imparting direction to the international community by moving the Europeans closer to regulation. By terminating its alliance with


\textsuperscript{99} Interview with Joe Steed, January 10, 1996, Willmington, Delaware. Joe Steed directed the Freon Products Division team at DuPont. He was responsible for scientific and governmental relations and public affairs policies.

\textsuperscript{100} The Nordic Annex proposal included two parts. Article One called for a worldwide ban on nonessential aerosol uses of CFCs and Article Two restricted nonaerosol uses of CFCs. Cagin and Dray, 259.

\textsuperscript{101} James Malone, Assistant Secretary of State - Oceans and International Environmental and Scientific Affairs - Department of State, "Letter to Alan Miller", Senior Staff Attorney - NRDC, (October 26, 1983).
the Europeans in their opposition to CFC controls and by starting to build a coalition with the Nordic Annex countries, the United States forced the Europeans to change their position and shift from a "no protocol" stand to one that would accept some limits on CFC production. In addition, at the third session of the Ad Hoc Working Group of Legal and Technical Experts held in January of 1984, the United States ensured future talks would occur by opposing a last day proposal by Britain, France, Italy and others to delay CFC controls for three to five years until a detailed study of the depletion power of the chemicals under question was completed.

As the discovery of the ozone hole over Antarctica heightened concern about this environmental issue, and as the Vienna Convention signed in March of 1985 failed to achieve mandatory reductions of ozone depleting substances, the United States intensified its policy leadership in this area. For example, this country and its allies introduced a last minute resolution in Vienna calling for the UNEP to reopen diplomatic negotiations to achieve mandatory CFC reductions by 1987. This resolution

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102 Roan, 115. The United States also got the Nordic countries to eventually follow its lead. Later in 1983 the U.S. proposal to only seek an aerosol ban became the official policy position of the Nordic countries. Alan S. Miller and Irving M. Mintzer, The Sky is the Limit: Strategies for Protecting the Ozone Layer - Research Report #3. (World Resources Institute, 1986), 21.

103 "Confidential Reporting Cable", Department of State, (no date).

eventually led to the series of intergovernmental meetings that convened in December of 1986 and culminated in the signing of the Montreal Protocol in September of 1987. In addition, in January of 1986 the EPA revealed its Ozone Protection Plan which included a new round of international workshops to facilitate cooperation in addressing ozone depletion. The EPA also committed itself in this plan to making a decision on the question of domestic controls of CFCs by November 1987.  

Policy leadership by the United States significantly changed the character of the international negotiations at a workshop it hosted in Leesburg in September 1986. At this meeting this country initiated serious political negotiations by announcing that it no longer held that an international aerosol ban was a viable control policy. Then, when official negotiations resumed in December of 1986, the United States surprised the world community by proposing an immediate freeze on the production of CFCs and a reduction in emissions by 95 percent over the next decade. Previously, the debate over CFC controls had been focused around the less aggressive European position of a production cap. However, by anchoring the terms of the debate around a more ambitious phase-out proposal, the United States provided itself with "...a tremendous political advantage in the negotiations." 

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105 Roan, 144.
106 Cagin and Dray, 305.
107 Cagin and Dray, 311.
108 Interview with John Hoffman, January 22, 1996, Washington,
The strategy employed by the United States to use its negotiating skills and unilateral declarations and actions to reframe the issues and move towards international agreement worked. A third group of countries including Australia and some developing nations that had originally been neutral began favouring the U.S. position. More importantly, as the United States refused to back down from this proposal, the EEC began to follow its lead by shifting its position and proposing 20 percent reductions in ozone depleting chemicals at the next round of negotiations in Vienna in February of 1987. By the end of the next set of negotiations in Geneva, U.S. negotiators had successfully created a consensus that some type of action was needed to protect the ozone layer. A British official involved in the talks at this time stated, "We're pretty well agreed about what to do now. We're still far apart on what to do later on." 

The question of future CFC controls was the topic of discussion at the following set of negotiations in April. And again, the United States provided a policy leadership role by proposing a plan of 50 percent reductions in CFCs. A freeze in the chemicals would be achieved by 1990 followed by a 20 percent cutback in 1992 and

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110 Roan, 198. Also see Litfin, 110.

111 Roan, 196.

112 Roan, 196.
another 30 percent reduction sometime in the future.\textsuperscript{113} The United States was soon rewarded for advancing this innovative policy option. During the CFC talks one month later negotiators from the participating countries followed the U.S. initiative and began to discuss a number of possible agreements ranging from 20 to 50 percent reductions in CFCs.\textsuperscript{114} Ultimately, efforts by the United States to initiate a resumption of international talks after the Vienna Convention was signed paid off. The centrepiece of the American plan, a 50 percent reduction of ozone depleting substances, was enshrined in the final agreement signed in Montreal in September of 1987. According to the EPA officials who devised the U.S. position, this level of reductions was deemed necessary to curb ozone depletion in the future and, therefore, constituted the main goal of the United States in the negotiations all along.\textsuperscript{115}

At the same time that U.S. officials (including EPA administrator Lee Thomas, and Richard Benedick and John Negroponte from the State Department) were proposing the future phase-out of CFCs at international negotiations, officials from the Departments of Interior, Agriculture and Commerce, the Office of Management and Budget and the Office of Science and Technology Policy were opposing the U.S. position. The internal debate intensified and came to a head in Washington when, at a Domestic Policy Council

\textsuperscript{113} Roan, 200.

\textsuperscript{114} Cagin and Dray, 329.

\textsuperscript{115} Interview with John Hoffman, January 22, 1996, Washington, D.C.
meeting on June 18, 1987, George Shultz offset opposition to EPA's position by indicating his support for a strong CFC agreement. Reagan himself settled the dispute by accepting the U.S. negotiating position in its entirety.\textsuperscript{116} Lee Thomas indicated the importance of Reagan's leadership on this important occasion when he stated,

...as we went into the Montreal Protocol I thought we went in with as strong a position as we could have asked for. We went in with a full commitment that we wanted to cover all CFCs and halons, which was something I had really pushed for. We went in with a commitment that we wanted an early reduction process. We wanted not just to go for a freeze...We went in domestically with a very strong position. As a matter of fact, I by far, had the strongest position going into Montreal than any other minister there, and I had it from the president of my country. And very few of the others had that strength.\textsuperscript{117}

Reagan continued his efforts aimed at keeping this issue on the global agenda when, at the June 1987 Venice Economic Summit of the Group of Seven, he was successful in making protection of the ozone layer first among environmental issues requiring concerted action by the international community.\textsuperscript{118}

Intellectual leadership by the United States was becoming more prominent in 1985 or 1986 as well. Possessing between 80-90

\textsuperscript{116} Benedick, 65. While the EPA and State Department were trying to win the interagency debate in Washington they were also forging indirect and informal coalitions with environmental organizations in other countries that were opposed to strict CFC controls. During 1987 the State Department encouraged U.S. environmentalists to stimulate environmental groups in Japan and Europe to counter industry opposition to CFC regulation. Benedick, 28.

\textsuperscript{117} Roan, 202.

\textsuperscript{118} Benedick, 57.
percent of the world's atmospheric science skills, the United States began to organize and coordinate much of the scientific work that was being done worldwide on this issue. Under the direction of Dr. Robert Watson of NASA, efforts were made to make the NASA scientific assessments into internationally prepared and accepted reports on ozone layer depletion. As early as 1981, Watson was successful in having the NASA assessment cosponsored by the World Meteorological Organization. By 1985, Watson's coordination efforts enabled him to convince Britain, Germany, UNEP, WMO and the European Commission to cosponsor the NASA scientific assessment of that year. Finally, in June of 1986 the EPA and UNEP jointly sponsored a seven day conference aimed at highlighting the health and environmental effects of ozone depletion and climate change.

In addition to organizing much of the scientific research into the causes and effects of ozone depletion, scientists and policy makers from the United States attempted to gain acceptance for their ideas among important members of the international community on several occasions. Early in 1985, officials from EPA, NASA and NOAA exchanged information with scientists in India, Egypt, Australia and the former Soviet Union. As well, policy makers travelled to Brussels, Bonn and Tokyo to increase understanding of

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119 Jon Birger Skjaerseth, "The 'Successful' Ozone-Layer Negotiations: Are There Any Lessons to be Learned?", (Lysaker: Fridtjof Nansen Institute, 1992), 300.

120 Interview with Robert Watson, January 22, 1996, Washington, D.C.

121 Miller and Mintzer, 1.
the issues associated with this environmental problem. At the International Conference on the Health and Environmental Effects of Ozone Modification and Climate Change sponsored by the United States and held during September of 1986 in Leesburg, this country had a very strong presence. With 14 official participants at this conference the United States was by far the most heavily represented country. The ability of U.S. officials to influence the bargaining process at this session with new information and ideas was enhanced by the fact that fully one half of the 31 papers presented were from the United States. The historical record suggests that U.S. scientific leadership did have an effect in bringing the international community closer to the position advocated by the United States. Karen Litfin argues that it was at


123 The EPA also cosponsored with UNEP the International Conference on the Health and Environmental Effects of Ozone Modification and Climate Change held three weeks after the May 1986 economic workshop. Litfin, 88.

124 Britain was second with only four official participants. Litfin, 89.

125 Litfin, 90. For example, some of the papers presented include:
Leesburg, where the United States had such a strong presence, that the international will to create a CFC treaty emerged for the first time.\textsuperscript{126} Thus, because of the efforts of officials like Robert Watson from NASA, the world looked increasingly to the United States to provide the intellectual leadership necessary to understand and address this environmental problem as the international negotiations took place.

When the time was ripe during the Montreal Protocol negotiations, structural leadership by the United States also came to the fore. On a number of occasions U.S. negotiators supported their intellectual and policy leadership efforts with bargaining leverage arising from the material capabilities they possessed. Markus Jachtenfuchs notes that, "after long and staggering negotiations, strong U.S. pressure had finally forced the EC to accept an agreement."\textsuperscript{127} Similarly, Peter Haas, in his examination of this case, argues that the United States exercised political muscle at the international meetings to ensure a treaty was negotiated.\textsuperscript{128} In particular, as a form of arm twisting, Richard Benedick of the State Department took advantage of threats emanating from Congress in 1986 to restrict the access of CFC-based products to the American market as part of his strategy to have the

\textsuperscript{126} Litfin, 89.


\textsuperscript{128} Peter Haas, "Banning Chlorofluorocarbons: Epistemic Community Efforts to Protect Stratospheric Ozone", International Organization. 46: (Winter, 1994), 207.
U.S. negotiating position accepted.\textsuperscript{129} One knowledgeable observer stated,

Proposed legislation [in Congress] to curb CFCs unilaterally put pressure on other governments and U.S. industry with the suggestion that the huge U.S. market in CFC containing products - like refrigerators and automobiles - would be cut off from exporters who did not comply with the more stringent U.S. regulations.\textsuperscript{130}

Evidently U.S. negotiators made full use of the huge economic power of the United States, including the size of its CFC market, to persuade other countries that the economic consequences of not signing the Montreal Protocol would be harsh. Indeed, the economic incentives to join this agreement became part of the final document in Article 4 of the protocol, the trade restrictions provision. This section requires that signatories of the protocol ban the import of bulk CFCs within one year of its entry into force and ban the import of "CFC-products" from non-parties after four years.\textsuperscript{131}

U.S. representatives also convinced many developing countries to sign the Montreal Protocol by using the promise to share new CFC replacement technologies as bargaining leverage in the discussions. The United States possessed by far the most advanced scientific and technological capabilities and skills related to the CFC issue in

\textsuperscript{129} Young, 1991, 290.


the world at this time. For example, the EC had nothing to compare to the NASA/NOAA research initiatives into the effects of CFCs or the numerous studies conducted by the National Academy of Sciences. European scientists conceded as much at a meeting in Colorado in 1988 by noting that in the stratospheric sciences, "the gap between Europe and the United States is increasing rapidly." The United States was therefore able to provide developing countries with an important technical assistance incentive that helped convince them to support this agreement. Article 9 of the Montreal Protocol requires signatories to cooperate in research and development and share information on new CFC substitute technologies. Thus, the great economic and scientific capabilities of the United States were employed by U.S. negotiators to provide structural leadership at important junctures in the negotiations leading up to the Montreal Protocol.

The United States provided intellectual and political energy and acted as an initiator to action on the ozone layer issue. On several occasions this country provided the international political system with a model for emulation and set the standard with concrete action in its efforts to create a CFC regime. As well as being the first country to call for significant controls on all

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132 Benedick, 29.
133 Benedick, 29.
134 Capretta, 229. Developing countries were also enlisted to support this agreement with the offer of extensions on the protocol's deadlines which permitted them a 10-year growth period for CFCs and halons. Roan, 209.
CFCs, the United States sent a message to the rest of the international community by authoring many of the important provisions that were eventually incorporated into the final ozone layer regime. Rather than refusing to lead international efforts to address this ecological problem, as it did during creation of the acid rain "30 percent club", this administration signed the Vienna Convention in 1985 which set the framework for future scientific research and discussions on ozone depletion. Then, in September of 1987, the United States signed the Montreal Protocol and, in April of 1988, was the first major nation to ratify it, thereby providing an example to other states in the international political system. Upon ratifying the Montreal Protocol Reagan stated, "our immediate challenge, having come this far, is to promote prompt ratification by every signatory nation." Shortly after the Montreal Protocol was signed the EPA proposed domestic regulations to implement it.

As noted above, given the aggressive way in which the Reagan administration addressed concern over possible ozone depletion,

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135 As noted above, in December of 1986 the United States called for reducing the emissions of CFCs by 95 percent over the next ten years.


many government officials and scientists involved in the policy discussions from the United States and from other countries agree that U.S. efforts led the world community during this time. In his analysis of the international efforts to protect the ozone layer David Leonard Downie notes that the United States was the most influential advocate of controls from 1974 to 1987.\footnote{David Leonard Downie, "Comparative Public Policy of Ozone Layer Protection", Political Science. Vol. 45, No. 2, (December, 1993), 194.} Jon Birger Skjaerseth, expressing a European viewpoint, argues that on the scientific front the United States used its virtual monopoly of atmospheric science skills to provide intellectual leadership throughout the entire process.\footnote{Skjaerseth, 300.} Having been involved in the negotiations that produced the Montreal Protocol, one mid-level official in the EPA stated in an interview that, "between 1985 and 1987 the U.S. effort was organized as fast as bureaucracies can be to pass the Protocol."\footnote{Interview with Stephen Anderson, January 19, 1996, Washington, D.C.} Indeed, immediately after signing this agreement a British delegate conceded to an EPA official that it was the United States that had pushed the other countries at the negotiations into accepting stricter CFC cutbacks.\footnote{Roan, 211.} Finally, Ivar Isaksen argues that EPA officials worked very closely with other bureaucratic officials in Europe and had a great deal of success in influencing the position taken by a number of foreign ministries.\footnote{143}
The existence of such strong consensus among this disparate group of individuals on this question provides much support for the assertion that the United States did take a leadership role in the discussions over CFC controls.

ii. Acid Rain Negotiations

In contrast to the policy response adopted by the administration on CFC controls, the arrival of Ruckelshaus at the EPA in 1983 did not coincide with new U.S. policy, intellectual or structural leadership in the international discussions addressing acid rain deposition. Rather, an examination of the important events surrounding the acid rain debate reveals that the United States either did not contribute to efforts to facilitate cooperation in this issue area, or actually tried to thwart the activities of other countries (most often Canada) attempting to initiate collaboration on SO₂ and NOₓ emissions controls. The following discussion highlights some of the important events in the acid rain institutional bargaining process that are indicative of this lack of U.S. policy, intellectual and structural leadership.

By 1983, the Reagan administration was coming under increasing pressure for its anti-environmental policies\(^{144}\) by a House of Representatives controlled by the Democratic Party and by the general public that routinely exhibited strong support for

\(^{143}\) Litfin, 111.

\(^{144}\) Some of the policies most relevant for this discussion are noted above.
environmental regulation. In an effort to restore some legitimacy to the EPA after the disastrous term served by Anne Burford as administrator, Reagan appointed the much respected William Ruckelshaus to this post. Ruckelshaus accepted this position only on the condition that he receive administration support in his efforts to tackle the acid rain problem. The message from Washington was that Ruckelshaus would be granted this support. At the swearing-in ceremony of the new EPA administrator in May of 1983 Reagan stated,

...many of us -- both here and in Canada -- are concerned about the harmful effects acid rain may be having on lakes and forests. I would like you to work with others in our Administration, with the Congress, and with state and local officials, to meet this issue head-on. At a time when spending in other areas must be curtailed, we have already asked for an increase of 112 percent in research funds for acid rain.

Ruckelshaus immediately set to work addressing this environmental problem and spent much of the summer of 1983 in meetings with concerned officials from industry, environmental groups, and government trying to hammer out a compromise agreement. Similar to the ozone policy decision, the final

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145 Burford was ultimately cited for contempt of Congress for refusing to produce information regarding Superfund clean ups. She was forced to step down as EPA administrator in March of 1983. Twenty other top EPA officials were forced to resign as well over this issue. Vig, 77.

146 Interview with EPA official, Courtney Riordan, January 16, 1996, Washington, D.C.

147 "Text of Remarks by the President at the Swearing-In Ceremony for William Ruckelshaus", (May 18, 1983), 2.

148 From May 23 to September 21, 1983 Ruckelshaus devoted nearly all of his time to hearing the concerns of various groups
proposal submitted by Ruckelshaus for presidential approval was
decided in a Domestic Policy Council meeting in 1984. However,
opposition from the Energy Department, and especially from David
Stockman of the Office of Management and Budget, was quite strong.
In the end Reagan did not support Ruckelshaus' proposal calling for
a 25 percent reduction in SO2 emissions.

The Reagan administration therefore dismissed an opportunity to
provide a model for emulation by setting a standard for concrete
action to address the acid rain problem. The lack of policy
leadership displayed at the presidential level on this occasion was
typical of the policy response developed by the administration
during Reagan's two terms in office. One area in which the United
States seemed to at least take some initiative during the 1983-1988
time period was in its funding of scientific research into acid
rain. The best example in this regard was the increase in funding
for the study of clean coal technologies that resulted from the

Having accepted the recommendations in the document, the Reagan
administration agreed to spend $2.5 billion over five years on
implementing a control technology commercial demonstration

and government officials associated with this issue. In this span
of four months he attended nearly 70 meetings where he spoke to
scientists, lobbyists or legislators. William Ruckelshaus, "Acid
Rain Meetings", Ronald Reagan Presidential Library, (Simi Valley

149 Lou Cannon, President Reagan: The Role of a Lifetime. (New
program. As large as this financial commitment to improving the understanding of acid rain science was, this expenditure must be viewed in a larger light that reveals an underlying lack of intellectual leadership. Shortly after the United States agreed to embark upon this long-term research project, it was repeatedly criticized by Canada for not following through with the initiatives outlined by the two Envoys. Within a year or two after Reagan accepted the recommendations in this document, Canada began arguing that the levels of actual and projected funding from the U.S. administration fell far short of those called for in the report. It was also pointed out that the United States was not using the Envoy's criteria to identify U.S. clean coal demonstration projects to fund, and that as late as March of 1987 the United States had not yet established a panel to oversee the research. Criticism of the administration's implementation of the Envoy Report's recommendations was so intense that Canada once again renewed its demand for a 50 percent reduction in acid rain causing emissions by the United States.

There are also few indications in the historical record that the United States changed course after 1983 and adopted a policy leadership role during Reagan's second term of office. In direct

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152 Bledsoe, (no page number).
contrast to its CFC policy, this country made few attempts to foster cooperation on the acid rain issue internationally, or bilaterally with Canada, by setting the agenda, suggesting innovative policy responses or through coalition building. Rather, it was most often Canada or the European countries such as Finland, Norway and Sweden that provided this important form of leadership. During Reagan's visit to Ottawa in 1981, and again during the June 1984 Economic Summit in London, it was the Canadian Prime Minister Pierre Trudeau, and not Ronald Reagan, who set the environmental agenda by giving acid rain top priority for discussion on the first occasion\textsuperscript{153} and by proposing regulatory action at the summit meeting three years later.\textsuperscript{154} Careful attention to the wording Reagan used to describe U.S. acid rain policy at the Bonn Economic Summit in May 1985 reveals his reticence to take the lead in the acid rain institutional bargaining process. Instead of calling for strong U.S. leadership on this issue Reagan stated that, "we shall cooperate in order to solve pressing environmental problems such as acid deposition and air pollution from motor vehicles and all other significant sources."\textsuperscript{155}

In retrospect even this rather meek statement was too strong to describe actual U.S. behaviour during the acid rain discussions. In March of 1984, the "30 percent club" was created which included

\textsuperscript{153} Carroll, 1983, 266.

\textsuperscript{154} Reagan opposed this motion. Park, 1987, 212.

a group of countries calling for a 30 percent cut in the emissions causing acid rain. Although insisting on being invited to the meetings in Ottawa, the United States eschewed cooperation during these discussions.\textsuperscript{156} Nor did the United States consent to make these reductions when, in 1985, 20 European countries signed an agreement with mandatory SO\textsubscript{2} controls. After the other major acid rain hold-out, Britain, finally agreed to cut these emissions by 14 percent in September of 1986,\textsuperscript{157} the United States was the only major western industrialized country in the world to refrain from making cuts in the chemical emissions that cause acid rain. It never did sign the 1985 Helsinki Protocol.

The few important advisors to Reagan on acid rain policy who did support controls including Michael Deaver and possibly George Shultz, were up against a larger group that opposed action. This group included Ty Cobb, Justice William Clark, Michael Darman, Anne Burford, James Watt, Don Hodel and David Stockman among others.\textsuperscript{158}

During its negotiations with Canada, the United States adopted the same stonewalling strategy that characterized its approach to this issue on the multilateral stage. While the United States was sending scientists and policy makers to Tokyo, Moscow and New Delhi to build coalitions supporting CFC controls, Canadian

\begin{itemize}
\item \textsuperscript{156} Park, 1987, 211.
\item \textsuperscript{157} Park, 1987, 189.
\item \textsuperscript{158} Interview with Allan Gotlieb, former ambassador to the United States for Canada, December 11, 1995, Toronto, Ontario. Allan Gotlieb argued that George Shultz was "neutral" on the question of acid rain but might support a program to help Canada.
\end{itemize}
representatives were fervently courting members of the House of Representatives and the Senate to garner support for action on acid rain. Canada spent close to $600,000 during the 1980s in its campaign to foster broad support for American SO₂ controls. This included advertising on U.S. billboards and radio spots, and the provision of information to the public upon request by the Canadian embassy.\(^{159}\)

In the Canada-U.S. bilateral negotiations around acid rain it was Canada that quite often provided the model for emulation and took the initiative by implementing innovative solutions to address this environmental problem. Not only was it the Canadian government that continuously advocated the signing of an acid rain agreement between the two states, but it was also Canada that made unilateral cutbacks in acid rain causing emissions during the 1980s. As early as 1982, Canada adopted long-range goals of 50 percent SO₂ reductions. These goals were given some substance when, in February of 1985, the seven eastern provinces including Manitoba, Ontario, Quebec, New Brunswick, Prince Edward Island, Nova Scotia, and Newfoundland formed an agreement with the federal government to meet these reductions by 1994. Part of that agreement saw Ontario, the largest emitter of SO₂ and NOₓ in Canada, institute its "Countdown Acid Rain" program which entailed a reduction from 2194 kilotons to 885 kilotons of emissions from the four largest emitters between 1980 and 1994.\(^{160}\)

\(^{159}\) Wilcher, 70.

\(^{160}\) Wilcher, 14, 15. In the face of inaction by the Reagan
Reagan promised Canada to consider an acid rain treaty in the early 1980s, in 1986 and again in 1988. While giving Canadian Prime Minister Brian Mulroney his assurances on the last occasion, Reagan had U.S. negotiators in Geneva resisting proposed reductions in NO\textsubscript{x} emissions in discussions on a protocol controlling these chemicals. Given the track record of the United States on acid rain, Mulroney gave quite the understatement when, in April of 1988, he stated casually, "I don't expect anything [an acid rain treaty] within moments."

Not surprisingly, the United States also failed to provide structural leadership in the search for a solution to this environmental problem. There are few indications from the historical record that the United States ever attempted to foster cooperation at the international or bilateral levels by using its economic and military strength to its bargaining advantage.

administration on this issue efforts were made by some individual states to tackle acid rain. In the summer of 1988 an agreement on acid rain emissions was reached between the state of New York and Ohio. "Press briefing by Marlin Fitzwater", The White House - Office of the Press Secretary, (June 7, 1988).


According to almost every measure then, the United States did not take a policy leadership role in the international and bilateral efforts to achieve some form of interstate cooperation on the acid rain issue.

VII. Conclusion

By examining the chronology of important events in the acid rain and CFC cases, this chapter suggested that the United States took a leadership role in attempting to achieve cooperation around the problem of ozone depletion, but did not lead the efforts to create a regime limiting acid rain deposition. Early in the Reagan presidency, there is little evidence that this administration attempted to facilitate interstate cooperation to address either of these two environmental problems. However, by 1983-84 the United States began demonstrating intellectual leadership in international efforts to understand the effects CFCs have on the ozone layer. This was soon followed by policy leadership as U.S. officials gradually started to set the pace of the negotiations leading up to the Montreal Protocol. Once the Reagan administration was committed to tackling the problem of ozone depletion, it began taking the initiative in 1985-1986 and providing the international community with innovative policy options. The United States ultimately supported its position with structural leadership.

In contrast, the United States displayed little international leadership on the acid rain issue while Reagan was president. What sporadic intellectual leadership did exist, often in the form of
financing scientific research, was undermined by an administration that was not open to new information about acid rain and that often interfered in the scientific process to garner support for its own policy response. The United States not only failed to provide policy leadership in the acid rain case, but often refused to join the international agreements resulting primarily from the efforts of Canada or the European countries. Importantly, the United States did not sign the Helsinki Protocol in 1985 which mandated 30% cuts in SO₂ emissions. It also did not sign the Sophia Protocol in 1988 which instituted a freeze on NOₓ emissions. As U.S. policy on acid rain changed very little while Reagan was in office, there arose little need for U.S. structural leadership and therefore, this too was lacking in the acid rain negotiations.

Ultimately, the historical record indicates that the United States led efforts to create an ozone layer regime but did not lead the acid rain negotiations. The following chapters will draw on theoretical insights from the International Relations literature to suggest possible explanations for the different policy responses adopted by the Reagan administration in these two environmental cases.
Chapter Three - Saved by Science: Knowledge and the Formulation of American Environmental Policy

It is quite evident from the discussion in Chapter One that a complete explanation of why the Reagan administration took a leadership role in the ozone layer negotiations and not on the acid rain issue will necessitate a departure from dominant theories in the International Relations field. Most of these theories, including neorealism and liberal institutionalism, largely ignore the possibility that actors may learn new "patterns of reasoning" which may in turn shape or create new state interests. Instead, in order to achieve generalization and parsimony, such theories take state interests as given and rarely take account of the preference formation process of decision makers and the various factors which may affect it. Subjective factors including norms, ideas, and knowledge have been ignored in place of structural and material explanations of state behaviour.¹

In response, the relatively new epistemic community literature highlights how knowledge-based networks of specialists or, epistemic communities, may alter the preferences of decision makers to facilitate policy coordination in the international political system.² The next section briefly introduces epistemic community


theory, highlights some of its weaknesses, and then applies it to the cases under examination. It is argued that epistemic cooperation was not crucial in the achievement of cooperation in the ozone layer case, nor was its absence primarily responsible for the great delay in the signing of an acid rain treaty between Canada and the United States. The chapter concludes with a discussion of the contribution epistemic community theory makes in detailing the important role played by ideas and new information in the evolution of these two environmental cases.

There is greater recognition in the International Relations field that state level political processes are an important component in the determination of state behaviour. Whether one is interested in the intersection between international and domestic political linkages,³ how countries respond to international events,⁴ or factors affecting cooperation among states,⁵ an examination of how domestic political forces shape decision makers' preferences is essential. Some issues are particularly well suited for such an approach. In particular, environmental issues, which involve the distribution, redistribution or regulation of tangible

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⁵ Helen Milner, "International Theories of Cooperation Among Nations: Strengths and Weaknesses", World Politics. 44:3 (April, 1992).
goods such as welfare or affluence,⁶ require theories that do not "black box" domestic political processes. They also require approaches that recognize that scientific knowledge may be an important input into a state's decision making process. The most recent theoretical formulation that explicitly recognizes the importance of knowledge, ideas and beliefs as cognitive factors in shaping state behaviour is epistemic community theory.

I. Epistemic Communities Defined

The epistemic community approach illustrates how knowledge-based networks of specialists may play a role in,

articulating the cause and effect relationships of complex problems, helping states identify their interests, framing the issues for collective debate, proposing specific policies and identifying salient points for negotiation.⁷

In essence, groups of professionals facilitate policy coordination at the domestic and international levels by gathering information and interpreting scientific developments for future government policy making.⁸ Peter Haas argues that members of an epistemic

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⁶ Zimmerman argues that issues involving power, security and prestige are characterized by policy processes described most accurately with the rational actor model while issues involving the distribution, redistribution or regulation of more tangible goods are characterized by policy processes which involve the interaction of pluralist forces at the domestic level. Patrick McGowan and Stephen G. Walker, "Radical and Conventional Models of U.S. Foreign Economic Policy Making", World Politics. 33:3 (April, 1981), 366.


⁸ Peter Haas, "Banning Chlorofluorocarbons: Epistemic
community subscribe to the same normative and principled beliefs, the same causal beliefs, similar notions of validity and share a common policy enterprise.9 Fundamentally, it is agreement in these different areas that binds the knowledge-based community together and permits it to act as a cohesive unit. If consensus on beliefs, notions of validity or the policy enterprise is lacking, the power of the epistemic community is severely diminished as is its ability to play a meaningful role in policy formulation. Consensus is so important in this regard that "scientists split on causal knowledge cannot be an epistemic community."10 In addition, this literature suggests that epistemic communities are multinational, transideological and transcultural and include professionals from multiple disciplines.11 Importantly, the strength of the scientific consensus that binds a community together often depends on whether there are multiple sources of autonomous scientific institutions involved in the debate on an issue. A large country such as the United States with scientific bodies that operate independent of regulatory agencies in terms of funding and oversight is more likely to provide the basis of a powerful

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Community Efforts to Protect Stratospheric Ozone", International Organization. 46: (Winter, 1992), 221.


11 Haas as quoted in Smith, no date, 3.
international scientific consensus on an issue.

Epistemic communities are most influential under conditions of uncertainty or complexity because of their ability to articulate what new information or scientific developments imply for future policy. Because of the scientific uncertainty that pervaded both of the issues under study, the Reagan administration's policy response to the acid rain and CFC regulation issues is therefore a suitable candidate for an epistemic community explanation.

With the increasing uncertainties inherent in many problems faced by modern governments, epistemic communities have played a much more direct role in policy formulation on both the national and international political scenes. Knowledge-based networks of specialists shape policy innovation because they are able to frame the debate around certain issues and set standards according to which policy problems must be interpreted and resolved. These communities are able to exert pressure on governments through transnational links or by policy diffusion. This occurs when policy advice is transmitted through a number of different forums such as scientific bodies, international conferences and scholarly publications.\(^\text{12}\)

According to proponents of epistemic community theory knowledgeable professionals are able to institutionalize their influence directly by grasping bureaucratic power in national

governments and within international organizations (e.g., the United Nations). Once the new ideas and policies generated by these people are institutionalized they often become entrenched in the political system. For this reason the direct effects of these ideas on policy making will remain even when the epistemic community is gone.\textsuperscript{13} Ultimately, the influence of an epistemic community is dependent upon its extent and depth, the strength of its cohesiveness, the consistency of its beliefs, the bureaucratic placement of key members and the strength of its political opponents.\textsuperscript{14}

There are however some important obstacles that epistemic communities must overcome if they are to have success in shaping government policy. Epistemic community members must ensure for themselves access to decision makers so that they have the opportunity to provide information to influence government debate and policy making. Access may be acquired by testifying at various committees and subcommittees in Congress or, more importantly, by filling important government posts.\textsuperscript{15} In addition, the scientific information presented by knowledgeable professionals, aimed at decreasing the uncertainty experienced by policy makers in a

\textsuperscript{13} Peter Haas and Emanuel Alder, "Conclusion: Epistemic Communities, World Order and the Creation of a Reflective Research Program", \textit{International Organization}. 46: (Winter, 1992), 384.


\textsuperscript{15} Smith, no date, 9.
certain issue area, must be persuasive and deemed necessary by government officials. Whether the new ideas are accepted and acted upon is contingent on factors such as the existing degree of scientific consensus about a problem, whether a feasible solution to the problem is available and the self-interest of the decision maker.\textsuperscript{16} A final obstacle that may impede an epistemic community in its efforts to shape policy concerns the nature of the issue itself. Problems which are not perceived to affect the population directly, or do not concern politically powerful segments of it, may present difficulties for epistemic community members who wish to see government act to address them.\textsuperscript{17}

II. Weaknesses with the Epistemic Community Approach

There is a tendency in the epistemic community literature to mention such obstacles only in passing. Instead, observers of epistemic community behaviour focus their attention primarily on case studies purporting to show the ways in which consensual knowledge facilitates cooperation among states. They therefore frequently fail to acknowledge these and other more serious limitations of this theoretical approach to problems in the International Relations field. For example, epistemic community theory largely assumes that scientists and decision makers are one-

\textsuperscript{16} Smith, no date, 10.

\textsuperscript{17} Smith, no date, 10.
dimensional rational maximizers.\textsuperscript{18} Expert knowledge highlights the benefits and costs of certain actions and therefore reveals the options for rational choice so that undesirable consequences can be avoided. Decision makers choose among options according to which will benefit society, and not government, the most. Policy is not shaped by the interests of government officials, nor by historical or cultural context, and industry and individuals play little or no role in this process.\textsuperscript{19}

There is however a wealth of literature focusing on group decision making and the psychology of decision making processes that puts this assumption of rationality into question. Allison has highlighted how competition between bureaucratic groups can force the decision making process away from rational standards.\textsuperscript{20} Similarly, Janis and Mann argue that the motivations and desires of individuals may tend to "short-circuit" rational thinking processes.\textsuperscript{21} As well, Tversky and Kahneman have demonstrated that the way in which a choice situation is framed can dramatically influence the choice process such that it may no longer be


\textsuperscript{19} Boehmer-Christiansen, 77.

\textsuperscript{20} Graham Allison, Essence of Decision: Explaining the Cuban Missile Crisis. (Boston: Little Brown, 1971).

considered rational in nature. In effect then, as Boehmer-Christiansen suggests,

Important dimensions, such as the interests of expertise itself, the political costs of options in addition to economic ones, and constraints imposed by institutional capacities, tend to be ignored or put aside as 'noise'. Yet the very factors which rational models ignore may possess more explanatory power than environmental cost/benefit equations.

No longer is it possible to accept uncritically the "self-seeking belief which scientists (but few others) tend to share that there is a very direct link between more knowledge and appropriate action." Epistemic community theory, as it has developed, has also tended to disregard the role that historical contingency plays in paving the way for consensual knowledge to shape the preferences of decision makers. As John Kingdon suggests it may be of some benefit to concentrate less on the nature and origins of the ideas themselves and more on how and under what conditions they are able to shape the policy process. Indeed, there are a number of extraneous factors that may influence the attitudes of scientists and policy makers towards new knowledge. First, shifting

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23 Boehmer-Christiansen, 77.

24 Boehmer-Christiansen, 76.

commercial and political interests may have an important effect on how scientific findings are framed. And, as the acid rain case illustrates, the protection of such interests may mean that scientific information is disregarded or even buried to circumvent opposition to current government policy. Ideological goals may also shape the way in which scientific results are interpreted. Finally, the success of an epistemic community may hinge on the timely occurrence of crises or "critical events" or supportive economic and military conditions. Thus, any conceptualization of an epistemic community that follows the lead of Peter Haas and suggests a direct causal role in the development of government policy is inherently flawed and does not capture the complex array of variables at work.


Litfin, 34.

Smith, no date, 15.

One might object here and argue that Peter Haas does not conceptualize the ecological epistemic community as an independent variable but as an intervening variable. However, a close examination of Haas' argument in his paper "Banning Chlorofluorocarbons: Epistemic Community Efforts to Protect Stratosphere Ozone" suggests that this assertion is incorrect. Throughout the paper this author suggests that the ecological epistemic community "directly influence(d) the major CFC producer, Dupont", "was largely responsible for...selecting policy choices for its (the ozone layer) protection", "captured the hegemon (the United States)" and "directly affected outcomes through the activities of its members..." Peter M. Haas, "Banning Chlorofluorocarbons: Epistemic Community Efforts to Protect Stratospheric Ozone", International Organization. 46: (Winter,
III. The Value of an Epistemic Community Approach

Clearly epistemic community theory is imbued with a number of weaknesses in some of its core assumptions, in the way some of the important concepts are operationalized and in the manner in which these concepts relate to each other. It is therefore worth while to question the utility of testing this theoretical approach using the acid rain and ozone layer case studies. How could the field of International Relations possibly benefit by testing a theory that seemingly stands on such shaky theoretical ground?

Investigating the epistemic community explanation is worthwhile because on the surface it appears that scientific knowledge played a critical role in both of these cases. The compelling intuitive support for this approach cannot be overlooked. It was through scientific study that these environmental problems first came to light and it was in general accordance with the latest scientific knowledge that acid rain and CFC regulation was eventually devised. Scientific information was so central to the evolution of both sets of negotiations that they may be considered "critical cases".\(^{30}\) That is, these two cases seem best suited to fit this theory. Therefore, if it is

discovered that they do not accord to the requirements of this approach one may conclude that epistemic community theory is not helpful in understanding environmental issues in the International Relations field.

One must also show some caution not to dismiss too quickly an entire body of knowledge based upon the way in which a particular individual or a small group of people conceptualized it. Many of the criticisms that have been directed at epistemic community theory are concerned with how the scholar most associated with this body of knowledge, Peter Haas, developed it. As a first run at applying this approach to particular case studies Peter Haas and others presented problems of cooperation, primarily in the environmental realm, and their possible solutions, in a new light. The fact that there exist some theoretical weaknesses in his conception of epistemic communities should not, at this early stage, denounce the entire approach. Rather, it should alert the reader to possible pitfalls in theory application and suggest other avenues along which the role of scientific knowledge in facilitating cooperation may be envisaged. With this in mind the acid rain and ozone layer cases will be examined in this study under a lens guided by epistemic community theory. Application of this approach will take into account the weaknesses noted above, hopefully avoiding the problems encountered by Peter Haas and others, while maintaining the integrity of this body of knowledge.

Two important departures taken in this study away from earlier
epistemic community formulations concern the definition of consensus and the inclusion of government policy makers as full members of epistemic communities. Of critical import in the achievement of knowledge-based cooperation is the existence of consensus among community members on the core beliefs derived from the new scientific information. However, for a number of reasons the conceptualization of consensus in previous case studies has been problematic. In particular, Haas' contention that consensus requires agreement on both causal and normative (political, economic and possibly ecological) beliefs is too restrictive and, in fact, is rarely ever achieved in the real world.

In recognition of this limitation the definition of consensus used here requires that at a minimum an epistemic community needs a common language and shared knowledge of causality. People belonging to a network of knowledge-based specialists may therefore have different principled beliefs. This new formulation of consensus rescues the epistemic community concept from insurmountable problems of operationalization.

The second departure from earlier theorizing in this area concerns the fact that much of the epistemic community literature is drawn into including government officials or bureaucrats in the definition of an epistemic community. This is due to the widely accepted belief that new ideas influence decision making when they somehow attain institutional status. Sarah Mendelson and Jeff

31 Smith, no date, 5.
Checkel in their respective studies of how epistemic communities shaped policy in the Soviet Union during the 1980s, note that knowledgeable specialists require sponsorship, channels for communication and especially institutionalization to be effective.32

Heather Smith is more explicit in this regard when she argues that "if the community is to 'transmit' its knowledge and influence the definition of policy access means more than testifying at committees; it also means capturing key bureaucratic positions."33 Yet by including bureaucrats and other policy makers as part of the epistemic community these approaches effectively confuse the independent variable, the ecological epistemic community with the dependent variable, the decision(s) to cooperate by policy makers.

To illustrate this point consider that even though Peter Haas includes former EPA administrator Lee Thomas in the epistemic community active in the ozone negotiations he still highlights the influence this group of professionals had on the process by suggesting that, "Thomas had been extensively briefed by two scientists who were members of the epistemic community. He was sympathetic to their environmental concerns and found their arguments compelling."34 This assertion simply begs the question;

33 Smith, no date, 9.
why would Thomas need to be moved to action by the views of these community members when, presumably, he was also a member of this network and therefore shared the same causal and normative beliefs and notions of validity? Are there partial or half members of epistemic communities and, if Thomas belonged to this group, how are we to separate Thomas the epistemic community member from Thomas the decision maker to trace the policy influence? The tendency in much of this literature to include policy makers as full epistemic community members is therefore rejected in this study. Otherwise it becomes impossible to discern accurately the true effect scientists and the new information they expound have on the policy making process. Consequently, an investigation into the nature of a community of knowledgeable experts that might have existed around the ozone depletion issue focuses on the scientists that were involved in this debate.

To gauge the role that knowledge-based networks of specialists may have had in these two cases of environmental negotiations it is necessary to identify carefully whether communities existed in each case, trace the activities of the various members to measure policy influence and then determine whether decision makers used the views of the scientists to formulate policy.

IV. Ozone Layer Depletion

Epistemic communities receive their policy making influence by possessing an authoritative claim to the scientific knowledge that
they provide decision makers. Yet the knowledgeable experts most active in exchanging information about possible ozone layer depletion with government officials and, therefore, most likely to be considered part of an epistemic community, were "outside of the mainstream of atmospheric scientists". In spite of the fact that Sherry Rowland eventually received the Nobel Prize for his work on the CFC issue, at the time that he discovered the possible link between these chemicals and ozone layer depletion he had little background in atmospheric chemistry. Ralph Cicerone and Richard Stolarski were two other key scientists quite active on this issue. However, when they began work on a NASA assignment to study the potential stratospheric effect of space-shuttle exhaust in 1973 Cicerone was an electrical engineer and Stolarski, a physicist. As "interlopers" in the field of stratospheric chemistry it took them several months to work out that chlorine destroyed ozone in a catalytic chain reaction.


38 Cagin and Dray, 183. Stolarski later commented about this time that "I was naive about chemistry. I guess I figured if they gave it [CFCs] a name like 'chlorofluorocarbons,' it must be something horrible. I didn't know it was actually a very simple molecule." Cagin and Dray, 185.
The other institutional affiliations or qualifications that would explain why these scientists had more of a claim to valid knowledge about the state of the ozone layer than did various other atmospheric scientists who opposed CFC controls and had built their careers in that field are also lacking. For example, Cagin and Dray note that when Sherry Rowland accepted a position at the University of California campus at Irvine which "boast[ed] no tradition of scientific excellence, no community of Nobel laureates" his career had been unremarkable. 39 Similarly, his assistant Mario Molina, had just completed his Ph.D. thesis on his work with chemical lasers and began work on discovering what happened to CFCs in the atmosphere as a postdoctoral graduate. 40

Nor could the credibility of these researchers have increased as the scientific understanding of this problem developed with time simply because disagreement over the effects of CFCs on the environment and the causes of ozone depletion remained pervasive in the scientific community until the late 1980s. 41 In addition, the implications of control actions for mitigating the potential problems associated with ozone depletion were not well

39 Cagin and Dray, 175.
40 Cagin and Dray, 179.
41 The state of ozone layer science during this time period is discussed later in this chapter. For a chronological overview of ozone layer science and technology developments see the ozone layer timeline in Appendix D. Also see the acid rain timeline in Appendix C.
understood. 42 Almost a year after Joseph Farman's Nature article appeared in May 1985 documenting significant seasonal decreases in the ozone layer over Antarctica, scientists who believed this was an important issue were appalled that such a large number of their colleagues were unwilling to accept Farman's results. 43 Sherry Rowland, Dave Hofmann, Mike McElroy, Susan Solomon and others were dismayed that so many scientists were sceptical of Farman's claims and failed to recognize the significance of his discovery. 44

Clearly, the scientists proposing that CFCs might be linked to ozone depletion in the stratosphere were not bound as a group or epistemic community by their authoritative claim to the scientific information and ideas they were making public. It is also difficult to argue that the collective identity of this group was reinforced over time as their credibility grew because of a progression in the scientific understanding of this environmental problem. The status of these scientists as epistemic community members is therefore put into question in this regard.

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42 At the time the Montreal Protocol was signed very few safe and commercially viable CFC substitutes were available.

43 Cagin and Dray, 292. Apparently, some of the criticism levelled at Farman extolled the fact that he was "only a geophysicist who maintained ground-based records." Cagin and Dray, 284. Evidently, he did not receive a great deal of an authoritative claim to knowledge based on his institutional affiliations or qualifications as a researcher in this area.

44 Dave Hofmann studied stratospheric aerosols at the University of Wyoming by using measuring devices in balloons. Susan Solomon at the NOAA Aeronomy Lab in Boulder, Colorado specialized in atmospheric chemistry and dynamics. Mike McElroy was an atmospheric scientist at Harvard University. Cagin and Dray, 293, 285, 183.
It is also difficult to identify an epistemic community that might have existed in this case based upon the normative and principled beliefs that bound the individuals together and created a common policy enterprise. As noted earlier, if economic, political and ecological principled beliefs are a measure of community membership, this definition of an epistemic community becomes too restrictive and too difficult to use in this research setting. The formidable operational limitations associated with this type of definition ultimately lead the researcher into making meaningless generalizations about the normative beliefs of the scientists that belong to an epistemic community. It certainly is true that in the CFC case the scientist's set of values "...stressed preserving the quality of the environment" and although they were divided into conservationists and preservationists "they all shared an aversion to depleting the ozone layer." The obvious problem here is that even the most adamant scientists and corporate officials (for example at DuPont the leading CFC producer in the United States) opposed to the regulation of CFCs argued that they were motivated by similar values. Joseph Glas of DuPont was insistent in interview that he made an environmental and not economics or cost calculation when he decided in 1988 to go to his superiors and recommend corporate

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support for a phase-out of CFCs.\textsuperscript{46} Also, in a presentation to a group of scientists in 1995 Glas noted that,

As a DuPonter thrust into a business facing a global environmental issue, I was well served by our corporate environmental policy which dates to 1971 and has been expanded and upgraded since then as environmental science has matured. Business must be proactive in seeking scientific understanding of the impact of its products on the environment...\textsuperscript{47}

Another official from DuPont underscored the environmental ethic prevalent in this corporation and lent assurance that DuPont was not going to cause a problem to the environment if credible scientific evidence existed that this was occurring.\textsuperscript{48}

It is evident that any suggestion that an epistemic community did exist in the CFC negotiations will require a definition of this concept that does not include the normative and principled beliefs of the relevant scientists. An alternative, much less restrictive definition, requires that at base an epistemic community needs a common language and especially a shared knowledge of causality. As such, people belonging to a network of knowledge-based specialists may therefore have different principled beliefs.\textsuperscript{49}

Accepting this as a valid definition of an epistemic community, one could argue

\textsuperscript{46} Interview with Joseph Glas, January 26, 1996, Willmington, Delaware.


\textsuperscript{48} Interview with Joseph Steed, January 10, 1996, Willmington, Delaware.

\textsuperscript{49} Smith, no date, 5.
that a community did exist in the ozone layer case if it is demonstrated that there was a consensus on the causal beliefs about ozone depletion.

The evidence to support the existence of a community of knowledgeable experts based on a shared notion of causality is not compelling. There was no scientific consensus on the effects of CFC emissions and causes of ozone layer depletion until 1988 when the Ozone Trends Panel report was made public.⁵⁰ This occurred after the Montreal Protocol was signed and long after the United States started taking a leadership role in these negotiations in 1984. There is little debate among the people involved in this issue that, "scientists and industry representatives agreed that in 1987 there was not enough data to provide definitive answers about the cause of the decreases [in ozone levels]."⁵¹ Not until the late 1980s did a consensus on the causes and effects of ozone depletion exist according to David Stirpe of the Alliance for a Responsible CFC Policy.⁵² Similarly, Steve Seidel of the EPA suggested that while there was agreement among some policy makers that the growth of CFCs had the potential to deplete ozone, there


was no scientific consensus that these chemicals actually caused depletion until 1988.\textsuperscript{53}

It is true that early scientific studies conducted by NAS (e.g., 1979) argued that there were few unknowns associated with ozone depletion and therefore CFCs should be regulated. However, continued investigation into the causes and effects of ozone depletion revealed great uncertainties in the understanding of this phenomenon. These uncertainties led to great debate in the scientific community for much of the next decade. Indeed, estimates of future ozone depletion from major scientific studies undertaken between 1976 and 1984 fluctuated widely from almost 20 percent depletion to a possible net gain of 1 percent in total ozone.\textsuperscript{54} The well respected National Academy of Sciences issued reports on the effects of CFC production and consumption in 1976, 1979, 1982 and 1984. But due to the wide fluctuations in predicted future ozone loss these reports immersed this theory in confusion rather than contributed to its acceptance.\textsuperscript{55} By 1983 the science of ozone depletion was so uncertain that Alan Miller of the NRDC decided to delay suing the EPA for not following through with the second part of the ANPR issued three years earlier. He recognized

\begin{itemize}
  \item \textsuperscript{53} Interview with Stephen Seidel, January 29, 1996, Washington, D.C.
  \item \textsuperscript{54} Sharon Roan, Ozone Crisis – The 15-Year Evolution of a Sudden Global Emergency. (New York: John Wiley and Sons Inc., 1989), 110.
  \item \textsuperscript{55} Roan, 109.
\end{itemize}
that the EPA could quite easily justify its inaction by arguing that there was too little scientific understanding of CFC emissions to warrant the regulation of these chemicals.\textsuperscript{56}

The discovery of the Antarctica ozone hole in May of 1985 sent the scientific community reeling.\textsuperscript{57} As Karen Litfin notes, "if the ozone hole did not undermine the authority of the scientists, it did raise doubts about the science: the models had predicted approximately 2 percent total ozone depletion with constant 1980 CFC emissions, and the models were wrong."\textsuperscript{58} There was, not surprisingly, great disagreement about the cause of this disruption in the stratosphere. During the fall of 1985 a number of theories surfaced to explain this phenomenon, some pointing to CFCs as the culprit, and some not.\textsuperscript{59} Several respected scientists proposed a dynamic explanation which highlighted the movement of air through the atmosphere as the cause of the observed depletion.\textsuperscript{60} Another group of researchers pinned the ozone loss over the Antarctic on the solar cycle.\textsuperscript{61} Commenting on the large number of theories that were surfacing to explain the ozone hole, \textit{Science} magazine noted

\textsuperscript{56} Interview with Alan Miller, January 26, 1996, College Park, Maryland.

\textsuperscript{57} Cagin and Dray, 283.

\textsuperscript{58} Litfin, 99. In fact, Joseph Farman measured an annual loss of 30 to 40 percent of the ozone layer. Cagin and Dray, 283.

\textsuperscript{59} Roan, 139.

\textsuperscript{60} Roan, 139.

\textsuperscript{61} Roan, 140.
there were "almost as many as there are workers in the field."\textsuperscript{62}

The National Ozone Expedition (NOZEI), organized by NASA's Robert Watson, which hastily set out to discover the cause of the hole shortly after it was discovered, concluded in October of 1986 that it was not possible to determine what was causing the disruption. It declared that another expedition, the Airborne Antarctic Ozone Experiment, would be needed to uncover the reason for the ozone depletion. This group of researchers did not complete their work until after the Montreal Protocol was created in September of 1987.\textsuperscript{63} Therefore, at the time this agreement was signed, and certainly when the United States began to push for an international treaty in 1984, no measurable evidence of damage due to CFCs or other chemicals existed or was observed.

It is quite possible that the public or even policy makers may have made a link between the release of CFCs into the atmosphere and ozone layer depletion because of the dramatic discovery in the Antarctic. However, the scientists who would have comprised any epistemic community in existence would certainly not have accepted this link uncritically. In July of 1987, over three years after the Reagan administration decided to tackle the ozone issue, NOAA concluded that "the scientific community currently is divided as to whether existing data on ozone trends provide sufficient

\textsuperscript{62} Roan, 139.

\textsuperscript{63} Cagin and Dray, 339.
As noted above, scientific consensus on the causality of ozone depletion was only achieved in March of 1988 with the publication of the Ozone Trends Panel Report which included the work of 100 scientists from 10 countries and which indicated the need for an even larger study consisting of four panels with 500 researchers. The results of this larger study, released in 1989, concluded that the total phase-out of all ozone depleting substances (ODSs) was required.  


Jon Birger Skjaerseth, "The 'Successful' Ozone-Layer Negotiations: Are There Any Lessons to be Learned?", (Lysaker: Fridtjof Nansen Institute, 1992), 295. Karen Litfin (82) argues that the WMO/NASA report released in July of 1986 established a "common understanding of the fundamental scientific issues among all participating nations" and therefore represented an international scientific consensus on this issue. She points out that the report was cosponsored by three U.S. scientific agencies, three international organizations and a West German scientific agency and had the participation of approximately 150 scientists. As such this 'common understanding' created a window of opportunity in the negotiations because no longer could certain countries such as Britain and France deny that ozone could be destroyed by CFCs.

Later in her discussion of the Antarctic ozone hole however, she does admit that this discovery "did raise doubts about the science" and that because the predictions of the models were found to be so inaccurate the models themselves were now considered to be wrong. Litfin, 99. It is also hard to believe that in a little less than a year's time the scientific community could go from a discovery which disproved all of their models explaining a phenomenon to the realization of an international scientific consensus.
a. Epistemic Community Influence - Ozone Layer Depletion

The historical record indicates that even by the least restrictive standards of Heather Smith's definition which requires only shared causal beliefs among members, there did not exist an epistemic community prior to 1988 in the ozone layer case. However, if we were to accept uncritically, as much of the literature does, that an epistemic community of sorts did exist on this issue it is still impossible to demonstrate that an epistemic community was important in getting the Reagan administration to take a leadership role and sign the Montreal Protocol. Most importantly, before this international agreement was signed in 1987, few, if any, atmospheric scientists made specific policy recommendations concerning ozone depletion.66 Jon Birger Skjaerseth argues that "it was not until 1989 that policy makers received a clear recommendation from scientists about the kind of actions needed to address this ecological problem."67 If in fact the knowledge-based group of specialists was silent on how government should react to ozone depletion, then it is difficult to argue that this community influenced the policy making process on this issue. At the very least decision making influence would

66 Litfin, 187.

67 Skjaerseth, 295. This assertion seems to contradict Haas' contention that an epistemic community did make recommendations. However, the fact that Haas included policy makers such as Lee Thomas as part of the epistemic community may suggest a reason for this inconsistency.
require that an epistemic community at some point made specific recommendations to the relevant officials. In fact, the two important U.S. scientists coordinating research and advising policy makers in Washington, Daniel Albritton of NOAA and Robert Watson of NASA, were actually concerned that the EPA was going too far in pressing for such large cutbacks of ozone depleting substances. Testifying before Congress in 1987 Watson argued that "the science doesn't justify a 95 percent cut [in CFCs]." In this respect epistemic community influence could not have factored into the policy position adopted by the United States on possible depletion of the ozone layer.

Various accounts of the CFC negotiation process also suggest that other factors played a much greater role than any epistemic community in pushing the United States towards leadership to make agreement on the regulation of ODSs possible. For example, the discovery of the ozone hole was fortuitous because it helped create a sense of crisis right before the Montreal Protocol negotiations began. This undoubtedly intensified the perception by all involved (except possibly some dissenting scientists) that the probability of an ecological disaster had increased dramatically. In turn this lent support to those pushing for a precautionary approach on the question of CFC controls.69

68 Litfin, 104.

The announcements made by DuPont and the Alliance for the Responsible Use of CFCs in September of 1986 that they no longer opposed CFC regulation removed a significant obstacle in the negotiations. DuPont's later statement that alternatives to CFCs could be available in as little as five years had a similar effect. Further, giving the Reagan administration greater incentive to take more of a leadership role on this issue was the looming prospect of domestic legislation being passed unilaterally. Such legislative action would reduce American CFC production and consumption and therefore damage the competitive position of American industry. The Natural Resources Defense Council launched a lawsuit against the EPA in November of 1984 for not following through on the second phase of its CFC regulations and at the time of the Montreal negotiations it looked as if legislative action was quite possible. In addition, Senators Chafee and Baucus introduced legislation in the midst of the Montreal Protocol negotiations that would have cut CFC use domestically by 95 percent and blocked all imports containing or manufactured with these chemicals. And on June 5, 1987 the Senate passed a resolution

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70 Interview with David Hawkins, January 25, 1996, Washington D.C. David Hawkins was a senior official at the NRDC during the 1980s.

71 While this undoubtedly played in the minds of EPA officials when they were formulating proposals for the ozone talks, the fact that the EPA's final proposals regarding international regulation of CFCs were more encompassing and of greater magnitude than the NRDC had demanded would suggest that this factor may have only played a supportive role in this regard. It was important nonetheless.
calling for unilateral measures to eliminate ODSs in the event that international negotiations failed. While the probability of such legislative action at the domestic level in the United States does not provide a complete explanation of why the Reagan administration chose to lead the ozone layer negotiation process, in combination with the other factors, it does suggest that an epistemic community explanation by itself is inadequate and possibly even secondary to other more important contextual variables.

Ultimately, an account of the ozone layer case that focuses primarily on epistemic cooperation is flawed for two main reasons. First, without compromising the integrity of even the least restrictive definition of an epistemic community, it is not possible to argue that a community of scientists sharing principled or casual beliefs existed around the ozone layer issue. Even if one were to insist on the existence of a knowledge-based group of professionals in this case the vast majority of scientists refrained from making policy recommendations. Additionally, due to the existence of a number of more important contextual factors, there is little evidence of policy making influence by scientists. A complete understanding of the factors that motivated American decision makers to lead the way on CFC regulations requires moving beyond an epistemic community account of the negotiations and a careful exploration of other important variables.

Litfin, 106.
V. Acid Rain

In contrast to the ozone layer issue, it does seem at least possible to posit the existence of an epistemic community active in the acid rain debate waged between the United States and Canada throughout the 1980s. At the most basic level of causal beliefs, there certainly was a scientific consensus on the causes and effects of acidic deposition by the mid-1980s among those studying this ecological problem. As early as 1983 Robert Gibson argued "there is easily enough research evidence to show that acid rain has caused widespread environmental damage, particularly to aquatic ecosystems and it threatens to cause much more." 73 Five years later Malcolm Gladwell repeated the message declaring that "there is an almost overwhelming scientific consensus on the problem of acid rain." 74 In addition, the requisite technologies for mitigating this environmental problem were available by the late 1970s.

The development of scientific knowledge about acid rain took place in sequential stages beginning with the discovery that precipitation in various areas is acidic in nature and concluding with the observation that lakes and rivers were adversely being


74 Malcolm Gladwell, "Rain, Rain Go Away: Canadians may be outraged by acid rain - but the Americans believe it's all a plot to make them buy Canadian electricity", Saturday Night. Vol. 103, No. 4, (April, 1988), 50.
affected by acid deposition. The last stage was revealed by Swedish scientists in the mid-1970s. At this time scientific research indicating that pH levels in European lakes had declined and that the aquatic impacts of such acidification could be serious evoked similar concerns about acid rain in Canada and the United States. Responding to this information, the United States and Canada established a Bilateral Research Consultation Group on the Long-Range Transport of Air Pollutants to coordinate the exchange of information about acid rain. After the results of this group became public in October of 1979, the Carter administration signed the Memorandum of Intent (August, 1980) which committed the United States to negotiate an acid rain agreement with Canada and set-up three more bilateral work groups to achieve this goal. The external peer reviews of the scientific findings, conducted separately by both countries, ultimately concluded that there was enough known about acid rain to support selective reductions in SO₂ emissions.

75 Don Munton, "Acid Rain and Basic Politics", Alternatives. 10: (Spring-Summer, 1981), 22.


78 Regens, 171.
In contrast to the ozone layer case, the advanced state of scientific knowledge about the health effects associated with local SO$_2$ emissions meant that the technology was available to control this form of pollution. A number of options were available to the emitters of SO$_2$ ranging from the installation of scrubbers to the substitution of low sulphur for high sulphur coal for burning. By 1978 the cleaning techniques were so advanced that it was possible to remove 90 percent of the SO$_2$ from plant emissions. Other countries had also recognized the need to control SO$_2$ emissions. For example, in 1978 more than 500 scrubber plants were in operation in Japan, and were on average removing 90 percent of the fumes from coal-and-oil power plants, smelters and sulphuric acid plants.\footnote{Ross Howard and Michael Perley, Poisoned Skies: Who'll Stop Acid Rain? (Toronto: Stoddart Publishing Company Limited, 1991), 202.}

This knowledge of cleaning techniques was an indication of the advanced scientific understanding of this problem. The consensus in the scientific community was enhanced by study after study released throughout the early and mid-1980s indicating that acid rain existed and action was needed to avoid further ecological degradation. In addition to the studies conducted by the U.S.-Canada Research Consultation Group, released in October 1979 and again in 1980, other reports supportive of regulatory action were produced by the EPA (1981), the Interagency Task Force on Acid Precipitation (1981), the National Academy of Sciences (1983), the
White House Office of Science and Technology Policy (1983, 1987),
the Congressional Office of Technology Assessment (1983), the
Congressional Research Service (1983), and the Davis/Lewis Report
(1986). Indeed, as early as 1981 the Department of Energy was able
to report in its "Acid Rain Information Book" that in the areas of
fish destruction and human health effects the extent of the
information gap was "minor" and would only take months to close.80

The science of acid rain was so well developed that epistemic
community members were able to perform two important tasks which,
by and large, were not available to those working on the ozone
layer case. First, during the 1970s scientists began identifying
the nature of the damage that had already occurred to ecosystems by
acid rain. Swedish scientists prepared a study for the 1972 United
Nations Conference on the Human Environment in Stockholm which
asserted that sulphur dioxide emissions from coal-fired electric
power plants adversely affected ecosystems and human health.81
Likewise, the Norwegian Interdisciplinary Research Program
reporting in 1980 after eight years of scientific inquiry found
conclusive evidence of chemical and biological changes from acid
rain including the loss of fish populations in lakes and rivers
susceptible to acidification.82

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81 Regens, 170.

82 Regens, 171.
In the North American context, the U.S.-Canada Research Consultation Group on the Long Range Transport of Air Pollutants reported in 1979 the loss of salmon populations in Quebec and the Maritimes, and the loss of 40 - 75 percent of the acid neutralizing capacity of the lakes in the Haliburton-Muskoka area of south central Ontario. In addition, evidence linking changes in rainfall acidity to changes in SO₂ emissions from distant sources upwind was offered in August of 1985 by scientists at the Environmental Defence Fund.

Most everyone in the scientific community agreed by the mid-1980s that SO₂ emissions caused acid rain and that acid rain had a number of negative consequences for river systems, lakes, trees, buildings and even human health. For example, Courtney Riordan, responsible for the EPA part of the federal research initiative under the National Acid Precipitation Assessment Program (NAPAP) argued that a scientific consensus existed on the causes and effects of acid deposition but not on the precise nature of the source-receptor relationship. Similarly, the person responsible for overseeing NAPAP suggested during an interview that by the late 1980s there was greater scientific consensus on the causes and

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85 Interview with Courtney Riordan, January 16, 1996, Washington, D.C.
effects of acid rain than there was on ozone depletion. This view was supported by an official at DuPont who stated that, in contrast to research on CFC emissions, there was wide agreement in the scientific community about acid rain processes by the early 1980s.

As well, knowledgeable experts working on acid rain were generally more willing and able to make specific policy recommendations to decision makers supporting the various pieces of legislation proposed to control acid rain than were the researchers investigating ozone layer depletion. Myron Uman, of the National Research Council argued in 1981 that the latest scientific study "demonstrates that a uniform reduction in emissions of SO₂ would lead to a proportionate, uniform reduction in deposition of sulphates." In addition, a panel of scientists reporting to the White House Office of Science and Technology Policy on acid rain in June of 1983, declared "We recommend that additional steps should be taken now which will result in a meaningful reduction in the emissions of sulphur compounds into the atmosphere..."

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86 Confidential Interview, January 23, 1996, Washington, D.C.
87 Interview with Joseph Glas, January 26, 1996, Willmington, Delaware.
88 Myron F. Uman, Executive Secretary of the Environmental Studies Board of the National Research Council, "Acid Rain, 1983", Hearings before the Committee on Environment and Public Works - United States Senate. (October, 1983), 102.
89 White House Office of Science and Technology Policy - Panel on Acid Rain, "Acid Rain, 1983", Hearings before the
one prominent acid rain researcher recalled in interview the dismay he and other scientists felt after travelling to Washington and meeting with senior White House officials in the early 1980s. During this meeting the scientists stressed that consensus had been achieved on the causes of acid rain and the dire effects it was having on the surrounding ecology. However, administration officials seemingly ignored this new information and refused to lead the way towards the regulation of \( \text{SO}_2 \) emissions to reduce acid rain damage.\(^90\)

Clearly then, the most important requirement for the existence of an epistemic community, agreement on causal beliefs, did exist in the debate over acid rain controls. Also, it is evident that these knowledgeable experts were motivated by a common policy enterprise because many did make specific policy recommendations to the effect that sulphur emissions be dramatically reduced, although differences emerged on how to achieve this goal and how to pay for it. Therefore, an epistemic community, defined loosely, did exist on this issue and did participate in the policy process that at times pitted the United States against Canada and other countries in the international political system.\(^91\)

\(^{90}\) Confidential Interview, January 12, 1996, Millbrook, New York.

\(^{91}\) At the very least the epistemic community possessing authoritative knowledge about acid rain processes and working to provide the public and policy makers with this information included, but was not limited to: Gene Likens from the Institute of
a. **Epistemic Community Influence - Acid Rain**

Although an epistemic community was active in this case, it had very little policy influence in the United States and was unable to get the this country to take a leadership role in the intergovernmental talks. All efforts by this community of professionals to employ the existing scientific consensus to shape the formulation of acid rain legislation (or initiate it) were rejected quite forcefully by the Reagan administration. Don Munton suggests that to thwart the efforts of scientists, government officials fired or transferred many of the researchers knowledgeable about acid rain, opposed a speed-up of the ten year research program, buried commissioned studies that challenged their anti-regulatory views and delayed the reports of the bilateral working groups established by the 1980 Memorandum of Intent.92

Ecosystem Studies in New York who published the first paper on acid rain in North America in 1972; Michael Oppenheimer, a scientist with the Environmental Defense Fund; George Keyworth, head of the White House Office of Science and Technology Policy during the mid-1980s; Myron Uman, Executive Secretary of the Environmental Studies Board of the National Research Council (the operating arm of NAS); P. Herbert Bormann of the Yale School of Forestry and Environmental Studies; James N. Galloway from the University of Virginia; and James Hornbeck, Research Forester with the Hubbard Brook Experimental Forest.

It is certainly the case that the members of this epistemic community were from a variety of different disciplines. However, because the scientific effort around the acid rain issue was centered at the level of effects greater diversity was to be expected and therefore did not decrease the “authoritative claim to knowledge” of these community members. Furthermore, all of these epistemic community members were drawn from scientific institutions recognized for their excellence and independence.

Moreover, the scientific process on this issue was compromised when the U.S. administration refused to let the National Academy of Sciences, perceived to be pro-regulation, peer review a bilateral U.S.-Canada report on acid rain but instead insisted that a handpicked White House panel complete the task.\textsuperscript{93} Then, as noted in Chapter Two, the White House cut funds to NAS for acid rain research because earlier the Academy had urged the EPA to consider restricting SO\textsubscript{2} emissions to control acid rain.\textsuperscript{94} Evidently this epistemic community was unable to frame the debate over acid rain controls in such a way that policy makers became convinced concrete action was needed immediately. The Reagan administration never did diverge from its unrelenting opposition to a bilateral agreement with Canada involving emissions controls and it took a new president to get movement on this ecological problem. Much of the literature on epistemic communities only concerns itself with groups of professionals bound by normative principles that give environmental protection and human welfare issues primacy over others. It is however possible, and still keeping with the approach, for an epistemic community to form around a consensus on other principled beliefs which take such things as economic growth or individual freedom to be supreme. It is therefore worthwhile to

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\textsuperscript{93} Roy Gould, \textit{Going Sour: Science and Politics of Acid Rain}. (Boston: Birkhauser, 1985), 32. This strategy on the part of the White House backed-fire since the new panel sent the president a report that strongly recommended action be taken on acid rain immediately.

\textsuperscript{94} Park, 1987, 203.
\end{flushright}
posit, in the acid rain case, the existence of a competing network of specialists which argued that regulating SO$_2$ emissions was not necessary according to the latest scientific information. It could be suggested that this group, in contrast to the other epistemic community, was able to exert considerable influence over the policy making process, thereby preventing an acid rain agreement from coming into being.

There are however, two important considerations that put this interpretation of the events into question. First, it is difficult to argue that there existed a sufficiently large number of well respected scientists, bound by a scientific consensus indicating that acid rain did not exist and was not causing environmental damage, to constitute an epistemic community. Especially by the mid-1980s, scientific agreement on this problem was so widespread that it is not clear how an opposing community could have maintained its integrity and common policy enterprise. Even if such a group did exist and did urge the government to reconsider any plans for regulating SO$_2$ emissions, these scientists clearly were not able to convince decision makers that acid rain was not an important environmental problem. Contrary to what these experts, in very small numbers were arguing, many important officials in Washington, including Reagan himself, eventually acknowledged publicly that acidic deposition was occurring and was something that needed to be dealt with. Upon becoming head of the EPA in late 1983, William Ruckelshaus was so convinced that acid rain
required immediate action that he announced his intention to recommend a national plan of action to the president with four or five options to choose from.\(^{95}\) In September of 1985, the president's acid rain envoy, Drew Lewis, publicly admitted that acid rain is caused by SO\(_2\) emissions and announced his intention to propose a major clean up program.\(^{96}\) Most important however is the fact that Reagan himself eventually conceded implicitly that this type of air pollution needed to be acted on. In his 1984 State of the Union Address Reagan announced,

> On the question of acid rain, which concerns people in many areas of the United States and Canada, I'm proposing a research program that doubles our current funding. And we'll take additional action to restore our lakes and develop new technology to reduce pollution that causes acid rain.\(^{97}\)

This is a clear admission that acid rain exists and that it has negative effects on lakes. In 1987 Reagan again revealed his implicit acceptance of the prevailing scientific opinion about acid rain when he argued that this problem,

> ...isn't just as simple as saying, 'Stop putting the smoke out of the smokestack.' We've got to figure the automobile factor in there, too. But we have made a 10 percent reduction in the last 5 years of one of the major pollutants that is responsible for acid rain. But we're going to continue until we get the job done.\(^{98}\)

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\(^{95}\) Park, 1987, 207.

\(^{96}\) Gladwell, 53.

\(^{97}\) "State of the Union Address", Historic Documents of 1984, (1984), 90

If epistemic communities gain policy influence primarily by convincing decision makers that their research is most helpful in decreasing uncertainty about a certain phenomenon, then the fact that so many high level officials in the Reagan administration recognized acid rain to be a problem suggests that this epistemic community was not responsible for the outcome of the policy process. If policy makers refused to act on acid rain, which they did for two terms, it was for other reasons and not because a network of specialists persuaded them that the state of scientific knowledge at the time did not warrant it.

In brief, the epistemic community in existence that supported the regulation of acid rain causing emissions had little success in moving the Reagan administration in this direction and having it take a leadership role on this issue. And while it is not evident that an epistemic community calling for no action on acid rain existed, it is clear that any efforts scientists may have made in this regard were trivial to the policy outcome. Top administration officials, including David Stockman, Anne Burford and Reagan himself, seemingly rejected the information they were offered and instead eventually stated that acid rain was a serious environmental threat that required government action.99 In either


99 This argument seems to go against the fact that the Reagan administration repeatedly justified its inaction on SO2 regulation with the argument that "we need more research." However, it is important to note that administration officials rarely, if ever, argued that acid rain didn't exist or did not
case epistemic community theory is of little help in explaining why the United States did not take a leadership role on this particular environmental issue.

VI. Conclusion

Examination of the events leading up to the Montreal Protocol reveals that because scientific consensus did not exist at the most basic level of causality an epistemic community pushing for CFC regulation did not exist. As such no group of knowledgeable experts can claim responsibility for pushing the United States to create an international treaty to combat depletion of the ozone layer.

On the acid rain front an epistemic community advocating SO$_2$ and NO$_x$ controls was active but was not successful in getting the Reagan administration to move on this issue. However, the resolve of this administration to refrain from taking a leadership role cannot be attributed to the existence of another epistemic community that called for a "go slow" approach to this environmental problem. There is little evidence that such a community of experts existed. Moreover, most of the senior damage the environment. Rather, they most often argued that a lack of scientific research meant that they were not able to create an efficient and cost effective regulatory regime. The comments made by Secretary of State George Shultz in 1983 are instructive in this regard. Stating that the United States was not procrastinating on acid rain Shultz declared, "Foot dragging is one world for it. Another word is being very careful before you commit to spending billions and billions of dollars. And I think care is warranted under the circumstances." John Hay, "The White House Stalls on Acid Rain", Macleans. 96: 44 (October 31, 1983), 37.
administration officials already believed acid rain to be a problem requiring some form of action in the future.

The epistemic community explanation proposed in this chapter to account for Reagan's policy in these two cases is not validated by the historical record. Consequently, this theoretical approach is of little help in understanding why this administration took a strong leadership role in efforts to create an international ozone layer regime but not an acid rain regulatory program. Since these two environmental problems may be considered critical cases the failure of epistemic community theory here suggests that it may be of limited help in explaining other instances of environmental cooperation in the International Relations field.

What then does epistemic community theory contribute to our understanding of how the acid rain and ozone layer depletion issues evolved during the 1980s? This theoretical approach may not provide evidence that a tightly bound group of scientists directly influenced policy making during Reagan's tenure as president but it does invite the researcher to think of the importance of ideas and information in new ways. Specifically, this analysis provides impetus for the researcher to broaden the focus on ideas and information and investigate the ways they may have interacted with

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This study borrows the definition of an idea provided by Goldstein and Keohane. Accordingly, an idea is a mental image, a conception, a plan, knowledge or a sense of probability that "defines the universe of possibilities for action." Judith Goldstein and Robert Keohane, "Ideas and Foreign Policy: An Analytical Framework", in Judith Goldstein and Robert Keohane, eds., Ideas and Foreign Policy: Beliefs, Institutions and Political Change. (London: Cornell University Press, 1993), 8.
other variables to affect administrative decision making. For example, through highly complex processes ideas can shape how interests guide policy makers and even help define these interests in the first place.\textsuperscript{101} Epistemic community theory misrepresents the reciprocal influence of those with material power and those with scientific knowledge. A less restrictive examination of ideas will therefore capture how the politics of science affected the final outcome in each case.\textsuperscript{102} As such, a greater focus on ideas and knowledge heightens the role of scientists as information gatherers and interpreters rather than direct participants in the policy process.

There is much evidence that ideas were important in the evolution of efforts to create a regime to regulate CFC production and consumption. The positions adopted by various interest groups and administrative officials were nearly always justified in terms of the latest scientific information. As well, the decisions to call for strict CFC controls or to refrain from taking regulatory action were both purported to be based on the dictates of current scientific knowledge. In this sense the latest scientific findings became an important political resource for the NRDC, Dupont and other interest groups as well as for policy makers within

\textsuperscript{101} John Gerard Ruggie, "The Past as Prologue? Interests, Identity, and American Foreign Policy", \textit{International Security}. Vol. 21, No. 4, (Spring, 1997), 120.

government.

Another measure indicating the importance of the scientific knowledge about ozone layer depletion is the fact that it found its way into the final regulatory framework adopted in Montreal in 1987. As Brenda Seaver notes the ozone depleting substances controlled in this document were highlighted in the 1986 WMO/UNEP Report and at the 1987 Wurzburg, Germany scientific meeting. 103

Additionally, scientific assessments indicating that exempting the LDCs from regulation for a ten-year period would not significantly deplete the ozone layer permitted the United States to take a leadership role by offering this as a side-payment to recalcitrant states. 104 More generally, it is doubtful whether the 13 year process leading up to the control of CFCs would have occurred if Sherry Rowland and Mario Molina had not had the idea that these chemicals might deplete the ozone layer. 105

The state of the scientific understanding about the ozone layer was highlighted by people from interest groups, the Reagan administration and the scientific community as a key factor determining the pace of negotiations on this issue. Former EPA staffer Stephen Seidel stated bluntly, "I think it all starts with the science. The science drove this [CFC] issue, and you know,

103 CFC 113 and halons 1211 and 1301 were added to CFC 11 and 12 as substances that deplete the ozone layer at these meetings. Seaver, 51.

104 Seaver, 51.

105 Seaver, 51.
that is the reason why the private sector came along."¹⁰⁶ David Stirpe of the Alliance for Responsible CFC Use stated that, "the premise of the group [the Alliance] was to base policy on sound science...when the science said we had to phase-out CFCs we agreed to a phase-out."¹⁰⁷ DuPont was motivated by similar concerns according to Joseph Glas, a senior official in that company, "...we at DuPont made a commitment that if we see evidence that the release of these compounds cause environmental effects, which damage health, that we would stop making them."¹⁰⁸ Evidently the new developments in the understanding of how CFCs affected the natural environment were important in shaping the final outcome of this issue.

However, the science that evolved in these two cases was a necessary but not sufficient condition for the observed policy outcome. That is, scientific understanding either opened or closed windows of opportunity for other factors such as interest group pressure or decision maker values to become important determinants of the policy making process. In this sense ideas, interest groups and values shaped policy making in an "interactive" way through multiple linkages and feedback effects. As Litfin argues, "International decision making in the face of scientific


¹⁰⁸ Interview with Joseph Glas, January 26, 1996, Willmington, Delaware.
uncertainty involves a rich and complex set of interactions among facts and values, knowledge and interests.\textsuperscript{109} For example, interest group pressure meant that an impossibly high level of scientific certainty about very complex biological processes was demanded before action would be taken by the Reagan administration to reduce acid rain. On the ozone depletion issue new scientific information in the guise of a "critical event" (the discovery of the ozone hole over Antarctica) shifted the values of key decision makers and placed this issue high on the policy making agenda. For these reasons a better understanding of the effect that scientific ideas had in these two cases can only be achieved in conjunction with a discussion of interest group activity and decision maker values.

\textsuperscript{109} Litfin, 115.
Chapter Four - The Politics of Environmental Crises: Interest Groups Have Their Say

In this investigation of the Reagan administration's response to these two environmental problems, epistemic community theory fails as an explanatory tool. Yet it does invite the researcher to think of the importance of ideas and information in new ways. By opening up new avenues of investigation the epistemic community explanation expands the scope of the analysis in this dissertation in a number of respects. This chapter begins with a detailed investigation of the effect that interest group activity had on the Reagan administration as it responded to the acid rain and ozone layer depletion problems. An examination of the role that interest groups had in these two cases then informs a discussion of the receptivity of Reagan administration officials to new ideas and information. As such, an important link between "politics" and the influence of ideas is forged to show why certain scientific ideas about the causes and effects of ozone depletion were embraced by policy makers, while information about acid rain was repeatedly ignored.

I. The Main Argument

A close examination of the events constituting the Reagan administration's response to the acid rain and ozone layer environmental problems suggests that interest groups successfully moved the administration to take a leadership role in one case but
not in the other. Important differences in the policy networks that formed around these two issues affected both the capacity of state actors to direct policy independently and the related ability of social groups to shape the policy making process. On acid rain very powerful but specialized industry groups, constituting a weakly developed associational system, opposed \( SO_2 \) and \( NO_x \) regulation for the duration of Reagan's time in office. Due to its diverse nature, great power resources and a congruence of values with Reagan administration officials, the anti-regulation coalition effectively decreased the ability and willingness of decision makers to affect public policy change. This coalition also overshadowed the much less influential pro-regulation environmental community.

The policy network that formed around the problem of ozone depletion differed from the acid rain one in significant ways. Of greatest import, the anti-regulation associational system was united by a few dominant autonomous associations able to integrate complex scientific information. The capacity of the state was therefore increased and the Reagan administration was better able to interact fruitfully with business interests and take a leadership role on this issue. Also significant was the fact that industry eventually came out in support of regulating CFCs. Thus, a major obstacle for policy makers wanting to move forward on this issue was eliminated. In addition, after the discovery of the Antarctic ozone hole in May of 1985, governmental decision makers and industry representatives began to share some of the values held
by environmentalists.¹ And joining the now cooperative business coalition was an influential environmental community that, in contrast to the acid rain case, had a great deal of success in keeping the Reagan administration moving toward some form of CFC regulation. Lastly, it became clear as Reagan was completing his second term as president that there was growing bipartisan support in Congress for efforts to protect the ozone layer. This support was noticeably absent in the case of acid rain controls.

The investigation of societal groups in this chapter highlights how the "politics" surrounding these two cases influenced the manner in which ideas were received by the important state actors. I argue that the level of political conflict associated with these issues, largely involving interest groups and Congress, affected the amount of scientific consensus required by decision makers before they took action on these environmental problems. When the political conflict intensified, as it did over acid rain regulation, Reagan administration officials demanded an impossibly high level of scientific consensus on the association, mechanism and ecological effects related to this phenomenon.² In contrast, less political opposition to CFC regulation in the United States made decision makers more receptive to scientific information that was characterized by a much lower degree of consensus in the research community.

¹ See Chapter Five.
² The different levels of scientific consensus are discussed in greater detail later in this chapter.
II. Interest Group Theory

At present there are a number of scholars in the International Relations field who argue that a greater focus on domestic political processes is required to gain a better understanding of why state leaders make the decisions they do. The particular nature of the environmental cases being examined here affords the researcher with a promising approach for better understanding how the interests of actors in the international political arena may be shaped. Sonja Boehmer-Christiansen notes that environmental politics is an area where policy making is, in practice, severely restrained by domestic political processes. Often, in the process of debating the merits of new environmental regulation, conflict ensues over whether to re-allocate valuable resources away from consumption and economic growth towards protecting the ecosystem. Investigating what type of effect goal conflicts may have had on

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4 Michael Zurn suggests that the most recent environmental politics literature is based on a "postrealist consensus" which holds that "...world politics is not only about power and material interests but is also about nonmaterial interests, ideas, knowledge, and discourses." Michael Zurn, "The Rise of International Environmental Politics: A Review of Current Research", World Politics. 50, (July, 1998), 619.

key policy makers in the Reagan administration is crucial for understanding the wide divergence in the policy responses to the ozone layer and acid rain issues.

Pluralism is currently recognized as the dominant interpretation of how the U.S. policy making system works by most scholars studying American politics. Given the general recognition in the literature that the United States is a pluralist society in which groups compete with each other to influence public policy, the pluralist framework is well suited to investigate the way domestic political processes may have influenced the strategies adopted by the Reagan administration for dealing with the potential depletion of the ozone layer and the acid rain problem.

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Associated most readily with the writings of Robert Dahl, the pluralist perspective views power in society as fragmented and diffused so that many groups have the opportunity to participate in policy making. Government is little more than an umpire that oversees competition among various groups in society. It is from this bargaining and competition among groups that public policy is ultimately derived. Hastedt, 173.


7 Maidment and Tappin, 123.
There are a number of reasons why the potential existed for interest group politics to have had important policy effects in these two cases, even though the decision making technically occurred in the foreign policy issue area. As suggested above, the environmental management issue area is, by its very nature, prone to the creation of pressure group conflict and lobbying. With the prime concern in questions of environmental regulation being how scarce resources in society should be divided up, highly organized and powerful interest groups can be expected to weigh in heavily on this debate.\textsuperscript{8}

In addition, since the 1970s there has been a shift in power in the American political system from the executive branch to Congress.\textsuperscript{9} Motivated by mistrust and deep conflict with the executive over such issues as Watergate and the disastrous Vietnam war, Congress sought to increase its own power by passing measures such as the War Powers Resolution (1973) and the Budget and Impoundment Control Act (1974) which set up the Congressional Budget Office (CBO).\textsuperscript{10} The resulting fragmentation of power

\textsuperscript{8} Bohmmer-Christiansen, 70.


\textsuperscript{10} The War Powers Resolution forbids any president from deploying American forces for more than ninety days to a combat zone. The Budget and Impoundment Control Act prohibits presidents from refusing to spend the funding that Congress approves. The Congressional Budget Office was set up to create independent economic and budgetary studies. Karen O'Connor and Larry J. Sabato, \textit{American Government: Roots and Reform}. 2nd ed., (Toronto: Allyn and Bacon, 1996), 196.
within the political system meant that Congress became more active in responding to interest group and regional grievances. This was especially true of issues with a significant economic component attached to them such as the two cases being examined here. With greater access points to decision making and large increases in the number of interest associations in Washington, interest groups have become more important in the policy making process. The growing number of Political Action Committees involved in the election financing of candidates has only furthered this trend.

Another important reason an investigation of interest group behaviour may be fruitful for explaining foreign policy decision making is that there are indications that previous U.S. administrations, including the Reagan White House, monitored public opinion and interest group positions when formulating policy. Reagan gave public opinion an institutional presence within the executive branch by setting up the Office of Planning and Evaluation which had the responsibility of conducting and monitoring public opinion polls. Richard Beal, as head of this office, reported directly to the president or his advisors. This

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11 Clarkson, 10.

12 In 1961 there were 365 lobbyists registered with Congress. This number jumped to 23011 by 1987. There were over 3500 trade associations in Washington in 1986, more than triple the number in 1960. As a measure of the rapid increase in the cost of election campaigns the following figures are illustrative. A total of $72 million was spent on House and Senate races in 1974. By 1986 this figure had risen to $471.4 million. Hendrick Smith, The Power Game: How Washington Works. (New York: Ballantine Books, 1988), 29, 31, 32.

13 Jerry L. Yeric and John R. Todd, Public Opinion - The
administration also operated the Office of Public Liaison out of which staff members were assigned to monitor important interest groups. In this way the administration got some indication of the relative power of various pressure groups before making policy. Interest groups may also have some success influencing foreign policy making by lobbying Congress and having this branch of government pressure the State Department for particular policy outcomes.

However, any attempt to simply link the actions taken by various societal groups to affect policy change, with their actual success in this regard, reveals an important shortcoming of pluralism theory. In particular, the proclivity to attribute public policy formulation wholly to the preferences and influence of social groups ignores the significant autonomy that state structures often possess in the decision making process.


16 Cranford Pratt as quoted in Francis Sandback, Environment, Ideology and Policy. (Oxford: Basil Blackwell, 1980), 103. There has been much debate in the political science field over the possible decline of the state. Susan Strange suggests there has been a decline in the authority of states in the international political system. Susan Strange, The Retreat of the State: The Diffusion of Power in the World Economy. (Cambridge: Cambridge University Press, 1996). However, Peter Evans argues that while decline of the state is a possibility in the future, it is not likely to occur. Peter Evans, "The Eclipse of the State? Reflections on Stateness in the Era of Globalization", World
Pluralism, in short, is too simplistic in that it cannot account adequately for the synergistic relations between societal groups and the state. The nature of this relationship may differ significantly across sectors. As Coleman and Skogstad argue,

The structural characteristics of the relationships between state actors and societal groups vary widely across sectors and these differences greatly affect democratic access to the policy process and the likelihood of policy change.¹⁷

Guided by the theoretical formulation developed by these authors, the structure and power of the associational systems central to the acid rain and ozone layer issues was determined along with the character of the policy networks that existed and their effects on the policy making process. A more accurate description of the relations between state actors and societal interests in these two cases guides this investigation of why Reagan took a leadership role on CFC regulation and not on acid rain controls.

a. Interest Groups Defined

An interest group is defined here as, "an organization which seeks or claims to represent people or organizations which share one or more common interests or ideals."¹⁸ Rather than running

¹⁸ Graham Wilson, Interest Groups in the United States.
candidates in elections to acquire formal powers of governance, interest groups represent their members by trying to influence government.\textsuperscript{19} They attempt to make their voice heard in the policy making process by accumulating and employing resources including access to information, liaison with government officials, rational argument, mass media relations, leadership skills, cohesiveness, and the use of sanctions such as litigation.\textsuperscript{20} Another possible source of influence concerns the federal bureaucracy in the United States and the attempt by interest groups to capitalize on its weak centralizing and planning capabilities. Interest groups seek to cooperate closely with government bureaucrats in research, planning and rule making. This cooperative relationship is often enhanced when important positions in government agencies or departments are held by people sympathetic to particular pressure groups. The Environmental Protection Agency, under administrator Anne Burford, provided a good example of this type of relationship as this agency was “packed with industry

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\textsuperscript{19} William Maley, “Ethical Actors in Australian Foreign Policy: Political Parties, Pressure Groups and Social Movements”, in Paul Keal, ed., \textit{Ethics and Foreign Policy}. (Canberra: Allen and Unwin, 1992), 86.

\textsuperscript{20} R. Kimber and J.J. Richardson as quoted in Sandbach, 1980, 109. A particularly useful strategy for environmental groups has been fostering grass roots support among the public for specific policy initiatives. Environmental groups did just this by obtaining 1.1 million signatures urging the removal of Interior Secretary James Watt for initiating ecologically damaging practises. Henry Kenski, "The President, Congress, and Interest Groups: Environmental Policy in the 97th Congress", in Helen M. Ingram and R. Kenneth Godwin, \textit{Public Policy and the Natural Environment}. (London: Jai Press Inc., 1985), 86.
representatives". Burford herself was a former telephone company lawyer who had devoted much of her time to fighting government regulation. Similarly, Kathleen Bennett, a top official in the Air and Radiation Office at the EPA, had previously lobbied for corporate clients against EPA air pollution controls.

III. Associational Systems

a. Acid Rain

Early in the prolonged acid rain debate there existed a large number of societal groups with quite narrow interests on this issue. As such, the associational systems that formed around the acid rain controversy were weakly developed. The most active groups that lobbied for the implementation of a program regulating SO$_2$ emissions included the National Wildlife Federation, the Sierra Club, the National Audobon Society, the Environmental Defense Fund (EDF), the National Resources Defense Council (NRDC) and the National Clean Air Coalition. This pro-regulation acid rain associational system was relatively cohesive in that these groups approached policy makers with arguments bound by a few central themes. In the late 1970s these groups began to argue that a plan to reduce SO$_2$ emissions by at least 50 percent should be

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22 Clarkson, 189.

23 For a discussion of the characteristics of associational systems see Coleman and Skogstad, 21.
implemented immediately because acid deposition was a national problem, well understood scientifically, involved reasonable clean up costs and was creating significant ecological damage in the northeastern United States. Any delay in regulating the polluting chemicals would be irresponsible in light of the fact that the required control technology existed and there was much public support for such action. It was also noted that the threat of "irreversible" damage to the environment loomed large. As the science of acid rain progressed in the mid-1980s, and as public opinion grew more favourable towards controls, the environmental groups began to emphasize these aspects of the problem. They highlighted for policy makers any new reports arguing that acidification damage was occurring in the United States.

In the face of an obstinate administration on the question of addressing acid rain, the Canadian government decided early in the debate to affect the political balance in the United States by assisting the pro-control coalition of interest groups. Until a brief lapse occurred in 1985, Canada followed this plan by cooperating with environmental groups in the United States. It devoted vast resources towards convincing the American public and

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24 John Carroll, Environmental Diplomacy: An Examination and a Prospective of Canadian-U.S. Transboundary Environmental Relations. (Ann Arbor: The University of Michigan Press, 1983), 269. While Canada should not be conceived of in conceptual terms as an interest group or association, it did spend roughly $600 000 million on interest group type activities such as advertising, presenting briefs to Congress, giving official speeches and becoming involved in litigation to curb SO₂ emissions. Wilcher, 70. Its behaviour in this regard must therefore be captured in an interest group analysis of this environmental problem.
decision makers that acid rain was a serious problem that needed to be rectified. However, shortly after coming to power, the Mulroney government in Canada began to relax these efforts with the hope of limiting the conflict between these two states and ensuring a smooth free trade negotiating process.\textsuperscript{25} Thus, at a time when important proposals for acid rain legislation were being debated in Congress,\textsuperscript{26} the associational system supporting acid rain regulation received a severe blow when the Canadian government became less motivated to pursue this issue.

The group of interests opposing government action on this environmental problem was quite a bit more disparate and internally competitive than its adversary.\textsuperscript{27} Before 1983 the various industry


\textsuperscript{26} For example, in 1986 Representative Henry Waxman of California introduced a bill aimed at reducing acid rain that was backed by 150 House members. Because the bill's sponsors represented the entire political and regional spectrum of the House, it was thought, at the time, to stand a good chance of breaking the stalemate over acid rain. See Robert Taylor, "Waxman Unveils Acid Rain Bill: Support is Strong", \textit{The Wall Street Journal}. (April 11, 1986).

\textsuperscript{27} According to environmentalist Alan Miller, competition and disorganization among members of the anti-regulation acid rain associational system was responsible for their ineffectiveness with Congress. Interview with Alan Miller, January 26, 1996, College Park, Maryland.

The following statement by the president of the Ohio Mining and Reclamation Association to Canadian Prime Minister Pierre Trudeau in July of 1983 provides a colourful illustration of such ill-conceived strategies,

\begin{quote}
When talking about damages to fish, trees and lakes how can you ignore the damages in human suffering caused by whisky which you are exporting?...People are seriously injured, and killed, families are broken after excessive use of Canadian whisky. This is a far bigger concern to
groups and associations together denounced the higher energy costs, huge employment losses in the mining sector, and general economic stagnation that would result from a clean up program estimated to cost two to seven billion dollars per year.  

But with the growing perception in 1983-1984 that a control program was more and more likely, numerous schisms began to appear in the foundation supporting this coalition of interests.  

A brief overview of the policy preferences adopted by the various groups at this time illustrates this point.

Coal-fired electric generating plants in the United States, built before pollution control technology devices were mandated by the Clean Air Act of 1970 and the 1977 amendments, were the main target of SO₂ control advocates. They were considered to be larger contributors to this air pollution problem than were NOₓ emitters.  

Industry groups, such as the Edison Electric Institute and the Electric Power Research Institute, objected fervently to legislation that would result in greater production costs due to

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29 It was in 1983 that new EPA administrator William Ruckelshaus promised a plan to address acid rain deposition.

30 Sulphur dioxide causes more damage to ecosystems because nitrogen compounds can be absorbed in nature and are more easily neutralized. "Acid Rain Debate Falls on Florida", Tampa Tribune. (July 1, 1983).
the use of scrubbers, worth up to $100 million each. However, fearing the effects of regulation they were not helping to create, some power generating companies began to register support for legislation that contained provisions to ease the financial burden associated with pollution controls. For example, while falling short of supporting major SO₂ regulation, the Public Service Company of New Hampshire did announce in 1983 that it supported efforts to "mitigate" acid rain.

At the same set of congressional hearings, two other utility companies outlined the conditions under which they would support action on this issue. Noting that their corporation had already spent $300 million between 1970 and 1980 to limit SO₂ emissions, officials from the Northern States Power Company argued that they supported new legislation but that it had to be national in scope to spread out the enormous costs of new regulations. In contrast, the Montana Power Company suggested that those most responsible for the acid rain problem should pay the bulk of the costs. This was in large part because it operated outside of the Ohio Valley, the area thought to be producing most of the damaging

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31 Gladwell, 50.


emissions. Therefore, even within the utility industry, different and conflicting positions were adopted by companies pursuing their own narrow interests.

In an effort to ensure that it was not the only sector targeted for expensive pollution control measures, the power industry pointed out that NOx emissions from automobiles were a major contributor to the acid rain problem. Not unexpectedly, the automobile industry opposed this view and constantly resisted the imposition of new controls on car and truck emissions. Consequently, this industry did not support any type of acid rain legislation that included regulation of NOx emissions.

The utilities and the automakers were joined by the high sulphur and low sulphur coal industries and groups representing the interests of coal miners in their fight to resist acid rain controls. Groups representing the various interests in the coal sector were quite vocal in their opposition to proposed regulation. They included the American Mining Congress, the United Mine Workers of America (UMW), the National Coal Association, the Alliance for Clean Energy (an industry association of low-sulphur coal companies) and the largest coal companies in the United States.

34 Edward Bartlett, Montana Power Co., "Acid Rain, 1983", Hearings before the Committee on Environment and Public Works - United States Senate. (October, 1983), 47. Montana also produced low sulphur coal and therefore had an interest in seeking regulation that permitted fuel switching.

35 "Acid Rain Debate Falls on Florida", Tampa Tribune. (July 1, 1983).

36 The Alliance for Clean Energy was less insistent than were other groups in its opposition to acid rain controls.
such as Peabody Holding Company and Consolidation Coal Company. Their greatest concern was the negative economic impact associated with any decreased demand for coal arising from SO$_2$ controls. In June of 1983, UMW president Richard Trunka cited the loss of 80,000 miners' jobs and Peabody Coal Company officials argued that electricity rates could be expected to rise by billions of dollars if such legislation were enacted. With increasing speculation that some type of acid rain regulation might be adopted due to the coalition building efforts of EPA administrator Ruckelshaus in the summer of 1983, the more narrow interests of these groups came to the fore. As the debate in Congress began focusing less on whether a program should be implemented and more on who should pay the costs, differences of opinion began to surface on these issues. The high sulphur coal industry, operating in Ohio, Illinois, Indiana, Pennsylvania, western Kentucky and northern Virginia, strongly opposed measures that would permit utilities to switch to low sulphur coal in order to attain the lower SO$_2$ emission levels. Rather, the high sulphur coal industry argued that the use of scrubbers should be mandated by new acid rain legislation to keep

Rather, as noted below, it argued that if regulation was necessary then SO$_2$ emitters should have free choice in determining how to meet the reductions.

$^{37}$ "Finger Pointing", Daily Charleston. (June 6, 1983).

$^{38}$ See "The Legislative Geography and Dynamics of SO$_2$ Controls" in Appendix E. "Generic Policy Question: Is a Major Sulphur Reduction Program to Control Acid Rain and Its Alleged Environmental Effects Warranted and Justified", Office of Management and Budget, Cabinet Committee on Natural Resources and the Environment. (September 21, 1983).
the demand for its product high and to protect high-sulphur coal mining employment levels.\textsuperscript{39}

The low sulphur coal industry argued that the use of very expensive scrubbers was an economically inefficient way of dealing with the acid rain problem. It was well aware that permitting coal switching to achieve abatement targets would greatly increase the demand for its product, and hence profits. Located primarily in central Appalachia, southern West Virginia, eastern Kentucky, Tennessee, Virginia, Wyoming, Montana and Idaho, this industry therefore supported the argument made by the utilities in requesting flexibility when deciding how abatement targets would be achieved.\textsuperscript{40}

Composed largely of specialized groups that increasingly competed with each other for influence over the policy process, the interests active in opposing acid rain regulation conformed well to what Coleman and Skogstad term a weakly developed associational system.\textsuperscript{41} Characteristic of this type of system is the absence of one dominant association possessing the capability to coordinate and lead the differing interests involved in attempting to influence government policy. There certainly existed "peak" associations that attempted to represent the various groups


\textsuperscript{40} Bartlett, 47.

\textsuperscript{41} Coleman and Skogstad, 22.
concerned about acid rain controls. Speaking for the power generating companies was the Edison Electric Institute, for the miners the United Mine Workers of America, for the environmentalists the National Clean Air Coalition and for the coal companies the National Coal Association.\textsuperscript{42} However, there did not exist over-arching associations able to integrate all of the varying factions that supported or opposed acid rain regulation because of the specialized nature of the groups active on this issue. For example, there was no one association that integrated the automakers, utilities, miners and low and high sulphur coal producers and presented their views to government officials in a coordinated manner.\textsuperscript{43} As Myron Uman, a senior official at the National Academy of Sciences (NAS) suggested, "...the industry that was producing sulphur dioxide is a very dispersed industry. There is no one organization that has the power to say, 'alright we are

\textsuperscript{42} The degree to which these umbrella associations did, indeed, represent their members' interests and speak for them on questions of policy is not known in great detail. More important for this study is the fact that not all of these associations completely dominated their member groups. Nor was one single association able to represent the anti-regulatory interests as a cohesive whole. This is quite different from the ozone case as the following discussion will demonstrate.

\textsuperscript{43} The Clean Air Working Group was an umbrella industry group that organized efforts to oppose legislation making the Clean Air Act more stringent. Courtesy of Don Munton, International Studies Program, University of Northern British Columbia. However, this group coordinated action around the more general issue of CAA revisions and not the case of acid rain more specifically. In addition, it is doubtful whether this group had the influence required to bring all of the competing factions associated with acid rain in line to support some type of SO\textsubscript{2} and NO\textsubscript{x} regulation is doubtful. The fact that the utilities refused to accept a behind-the-scenes initiative by Robert Byrd to adopt a scrubber program supports this point.
going to stop doing this.

Groups in weakly developed associational systems are usually relegated to a policy advocacy role rather than to an 'insider' policy making role. The interest groups involved in the acid rain case were therefore left to lobby from outside decision making circles where their ability to shape the outcome was not assured. It depended largely upon their ability to bring state actors on side. Weakly developed associational systems and pressure pluralist networks tend to be problematic for government officials wishing to affect policy change simply because there are so many competing interests to consult. Yet, in the face of pluralist associations, the state has greater latitude to control the policy agenda and to use its institutional resources to create and implement policy of its choice. Even so, the groups constituting the associational system opposing SO2 controls were quite powerful, with the result that the capacity of the state to implement new environmental regulations was reduced. In addition, as noted above, many key posts in the Reagan administration were filled by former industry officials or lobbyists. These people in particular, and the Reagan administration in general, shared many of the values that corporate America held. Because these

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44 Interview with Myron Uman, January 23, 1996, Washington, D.C.
45 Coleman and Skogstad, 22.
46 Coleman and Skogstad, 22.
47 A more detailed discussion of the value congruence
government officials tended to agree with business that individualism, freedom, efficiency and economic growth were the nation's priorities, industrial interests obtained an important indirect source of influence over the policy making process. As such, the groups fighting against acid rain regulation were able to shape the Reagan administration's response to this environmental problem more so than one might expect from a weakly developed associational system. Guided by such considerations, an examination of exactly how much influence these groups wielded in the decision making process is undertaken in a later section of this chapter.

b. Ozone Layer Depletion

The associational systems that formed around the ozone depletion issue were strongly developed. Compared to the acid rain associational systems, there were fewer divisions among the interest groups that comprised the contingency opposing CFC controls and among the groups lobbying for their implementation. The pro-regulation associational system was virtually nonexistent from 1980 to 1984/1985. Interest was so sparse on this issue that Alan Miller of the Natural Resources Defense Council (NRDC) was virtually the only person in the United States working to formulate and disperse a pro-environmental viewpoint in policy circles.\(^\text{48}\)

\(^\text{48}\) Interview with Alan Miller, January 26, 1996, College Park, Maryland.
Indeed, at one point in 1983 when environmental activity was at its lowest ebb, EPA officials actually felt the need to convince Miller to keep working in this area lest the issue be forgotten altogether.\textsuperscript{49} When the Vienna Convention was being negotiated in Geneva in 1985 there were only industry and government officials in attendance from the United States. No environmental organizations participated in, or observed, this negotiating process.\textsuperscript{50} It was not until 1985/1986 that groups such as the Environmental Defense Fund (EDF), Greenpeace, WRI and NRDC became active on this issue.

Once these groups did become involved in efforts to achieve CFC controls, they approached decision makers with a similar set of arguments. They highlighted the scientific evidence indicating that depletion of the ozone layer had been occurring in the upper atmosphere since the 1970s and the adverse effects of such depletion included increased skin cancer rates, climate change and decreased marine and agricultural productivity. Therefore, they argued that regulation of CFCs, which would involve reasonable costs, should occur immediately.\textsuperscript{51} The urgency underlying these

\textsuperscript{49} During the mid-1980s there was some hostility within the EPA itself towards the stratospheric ozone issue. In addition, mid-level officials agree that the NRDC lawsuit was important in pushing the issue forward during this time. Confidential Interview, January 29, 1996, Washington, D.C.


\textsuperscript{51} Alan S. Miller, "Ratification of the Vienna Convention
arguments increased markedly with the publication of the paper by Joseph Farman in 1985 purporting to have discovered seasonal fluctuations in ozone levels at certain latitudes. Functioning as a "wake-up call" to environmental groups about the importance of CFC emissions, this discovery convinced them to begin emphasising the possibility that CFCs were causing "irreversible harm" to planet earth.52

The anti-regulation associational system of the ozone layer issue was much less disparate than that involved with the acid rain problem. There were relatively few producers of CFCs in the United States: Allied-Signal, Pennwalt, Kaiser, Essex and DuPont. DuPont was by far the largest CFC producer in the United States, accounting for more than 50 percent of domestic production of these chemicals and over 25 percent of total world production in 1985.53

On the consumption side of the CFC industry was a vast array of associations and corporations using these chemicals to make air conditioning units, refrigeration units, foam insulation, medical equipment, fire extinguishers, and electronics solvents, among other items. While the way in which CFCs were used by these

for the Protection of the Ozone Layer", Hearings before the Committee on Foreign Relations - United States Senate. (March 18, 1986), 4.

52 Alan Miller of WRI described the problem of ozone depletion in the following terms, "Inaction also fails to take account of the fact that CFCs stay in the atmosphere for 75 to 150 years after release. The risks are therefore cumulative and largely irreversible." Miller, 1986, 4.

companies varied, they all shared a few common concerns that remained paramount throughout the debate over possible CFC regulation. The vast majority of these users, including such corporate giants as General Motors, International Business Machines and General Electric, all required a stable supply of CFCs, or suitable alternatives, for their production processes at reasonable prices.

What competitive tendencies existed between these companies were most often overshadowed by these common interests. As such, the arguments employed by industry representatives to oppose possible CFC controls centred on a few often repeated themes. Industry argued throughout the first half of the 1980s that because the ozone depletion theory proposed by Sherry Rowland and Mario Molina had not yet been validated with empirical evidence of actual ozone decreases, it would be irresponsible to regulate CFCs. This was especially the case because, at that time, there were no CFC alternatives available that were safe, efficient and cost effective. In the face of major scientific uncertainty, high costs of regulating an industry important to the U.S. economy and due to declining growth rates in the consumption of CFCs, regulation should be delayed until the science indicated that some type of action was required. Industry also argued that any controls deemed absolutely necessary should be international in

scope to protect the competitive interests of U.S. companies.\(^{55}\)

Being strongly developed, the anti-regulation associational system encompassing both producers and consumers of CFCs was well situated to allow its members to transcend a policy advocacy role and actually participate as insiders during policy making. Early in the debate over CFC controls the Alliance for a Responsible CFC Policy was created through the leadership of DuPont to,

\[\text{...provide information to government agencies, the media and the U.S. Congress on the importance of CFCs, and to work to insure that any further regulation of CFCs is scientifically justified and properly balanced.}\(^{56}\]

This trade association was unusual in that it included a broad based coalition of over 500 domestic CFC related companies. Because the Alliance encompassed so many corporate entities, including both producers and consumers of CFCs, it was granted a relatively high degree of autonomy from its members. The only challengers to the Alliance in terms of funds for research, scientific capability, and legitimacy, were DuPont and, to a lesser extent, the Chemical Manufacturers Association (CMA).\(^{57}\) The clear

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\(^{56}\) Paul W. Halter, Science Advisor - The Alliance for Responsible CFC Policy, "Letter to Dr. Donald R. King, Acting Deputy Assistant for Environment, Health and Natural Resources", (December 21, 1981).

\(^{57}\) While DuPont is technically not an interest group there are several reasons why it is treated as other interest groups are in this analysis. First, it had vast financial resources at its disposal and the willingness to partake in the activities that the other more formal interest groups, the CMA and the Alliance,
convergence of interests among these three groups enabled a great deal of cooperation in the attempts of this anti-regulation contingency to shape policy making and prevent the implementation of CFC controls by government.\(^5^8\)

engaged in. With $30 billion in total sales and $500-$600 million dollars in CFC sales per year, DuPont regularly spent several millions of dollars on the research and development of new products. Reinhardt, 1989. DuPont also had its own scientists working to validate the ozone layer depletion theories and develop new substitutes.

This company’s scientific leadership made it a legitimate representative, along with the Alliance, of other CFC producers and users. Only DuPont would be able to provide the signal, in the guise of new CFC substitutes, for CFC users to accept the regulation of these chemicals. Before announcing its support for regulation in 1986, Dupont collaborated with user groups in the Alliance to get their support for this shift in position. DuPont also worked through the CMA to persuade other chemical producers to support this initiative. James Maxwell and Forrest Briscoe, "There's Money in the Air: The CFC Ban and DuPont's Regulatory Strategy", Business Strategy and the Environment. Vol. 6, (1997), 281.

DuPont also adopted an advocacy role on behalf of the CFC industry. Even after this company created the Alliance in the early 1980s to fight CFC regulation, it continued to independently testify before Congress, submit scientific and policy reports, give official press releases, and interact closely through workshops and policy meetings with EPA and other government officials. DuPont had a sizeable external affairs department that worked closely with the Freon Division during these years. Maxwell and Briscoe, 276. The fact that "DuPont's decision to support international regulation was the critical moment in the more than decade long ozone depletion controversy", (Maxwell and Briscoe, 281) suggests that this company played a role similar to other interest groups in the CFC policy process.

\(^5^8\) DuPont was joined by 29 other companies such as Carrier, Dow, 3M, AT&T, General Motors and Ford on the board of directors at the Alliance. Interview with David Stirpe, Arlington, January 18, 1996. There is little evidence to suggest that significant competition existed between DuPont, the Alliance and the CMA. They most often approached government with the same arguments opposing regulation. They also cooperated in research endeavours through the Fluorocarbon Program Panel supported by 19 CFC producing companies from nine countries and organized under the umbrella of the CMA.

One way DuPont did have a leadership role was by setting
The Alliance was of great importance to the policy process because it was able to coordinate the interests of industry and approach key decision makers with at least the perception of a united front, even if it did not always exist in reality. In turn, government officials were not put in the position of having to consult a number of different groups with competing demands, as was the case in the acid rain issue.

The associational system of CFC producers and consumers that opposed controls may also have lent itself more to policy participation because of the way the larger interest groups and corporations were able to organize the relevant scientific and technical information relating to this environmental problem and make it accessible to key decision makers, both inside and outside of government. The interest associations involved in the CFC issue had a greater scientific orientation than those organized to thwart action on acid rain damage. Many of the most active groups opposing CFC controls were literally based on science in that their products, manufacturing operations, revenues and even corporate ethics centred on scientific processes and ideals. Certainly the best example of a corporation displaying this scientific

market trends. With such a high share of the CFC market DuPont alone could move other producers of CFCs toward alternatives simply by taking the first step and creating the competitive pressures to do so. Additionally, as noted above, industries using CFCs in production processes looked to DuPont for indications about the future availability of substitutes when deciding whether to support CFC regulation. Thus, when DuPont announced in 1986 that it supported the Montreal Protocol negotiations this had a dramatic effect on the market and on perceptions about the future costs of regulation to various businesses.
orientation is DuPont. As Forest Reinhardt argues,

The influence of science on the company extended beyond the product line, pervading the corporate culture. DuPont managers routinely spoke of the firm as being "science-driven"...its middle managers see themselves fundamentally as scientific problem solvers with the right tools to serve an increasingly technological society. 59

The preoccupation with science at this company is reflected in the fact that most of its senior officials are engineers or scientists by trade. Robert Forney, the executive vice-president of DuPont at this time, was a chemical engineer, as was Joe Glas who became the director of the Freon Products Division in 1985. In addition, Joe Steed, the person responsible for this division's scientific, governmental relations and public affairs policies, was also previously trained as a scientist. 60

In contrast, many of the business groups constituting the anti-regulation acid rain associational system did not share this scientific orientation. As one senior official at NAS argued, "...the people who are running coal fired boilers are businessmen who hired engineers and were producing things without much contact with fundamental science." 61 The very survival of these corporations did not depend on science. Therefore, a scientific culture was lacking. Consequently, relative to the business groups involved in the production and use of CFCs, industry officials

59 Reinhardt, 9.
60 Reinhardt, 10.
61 Confidential Interview, January 23, 1996, Washington, D.C.
active in the acid rain issue were less able to integrate the complex scientific information associated with this ecological problem into their belief systems. As a result, they were certainly not as open to new information about it. An NRDC staffer described effects of this difference in scientific orientation in the following manner, "...DuPont was extremely involved in and aware of the science, the true state of the science. They never did what the fossil fuel industry routinely tries to do which is stick their head in the sand and engage in absolute denial."

The combination of a scientifically oriented CFC industry, directed by a few very large members (DuPont and the Alliance) sharing common interests, encouraged the development of a highly integrated policy network characterized by strong links between

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62 Confidential Interview, January 16, 1996, Washington, D.C. In fact, there are several indications that by the mid-1980s representatives at DuPont placed special importance on finding out the truth about the theory of ozone depletion regardless of future implications for business practices. In particular, DuPont scientist Mack McFarland was instructed to leave aside the company's stated position on potential ozone depletion and find out whether this theory was valid. Confidential Interview with a senior official at the National Academy of Sciences, January 23, 1996, Washington, D.C.

Another indication of DuPont's openness to scientific information on this issue is the fact that after 1987 this company went out of its way to hire the best scientists available to evaluate future CFC substitutes before they came to market. With this goal in mind they hired NASA scientist Bob Watson to direct these efforts. Mack McFarland, "Chlorofluorocarbons and Ozone: First Plenary Lecture at Jekyll Island Meeting", Environmental Science and Technology. Vol. 23, (October, 1989), 1208.

63 Confidential Interview, January 26, 1996, College Park, Maryland.
government and business. Fundamental to the creation of this network, according to a senior official at EPA, was industry participation in the funding of research, in helping to assess the new information and in the formulation of public policy. As well, after the ozone hole over Antarctica was discovered in 1985, officials in the administration and in the CFC industry began to emphasize values similar to those held by environmentalists. Greater respect for human health, future generations, and the fragile ozone layer by all parties in the policy network provided an indirect source of influence to environmental groups during the debate over CFC controls.

DuPont, the Fluorocarbon Program Panel of the CMA and government officials in NASA, NOAA and the EPA cooperated in finding sufficient resources for research purposes. Industry was often willing to fund projects that officials at these government agencies thought were important but were unable to finance.

64 For an explication of the concept of a highly integrated policy network see Coleman and Skogstad's (26) discussion of this notion as developed by Wilks and Wright.


66 The next chapter documents in greater detail the value shift that occurred among government and industry officials with the ozone hole discovery and relates how this shift independently shaped decision making on the ozone layer issue. The discussion here is concerned more with how a general congruence of values between industry, environmentalists and government officials after 1985 translated into a more prominent role for environmentalists in the policy making process.

67 Interview with DuPont official Joe Steed, January 10, 1996, Willmington, Delaware. Robert Watson, a senior researcher with NOAA, also noted the importance of the co-sponsored research.
rain research, on the other hand, was much more disjointed as there was no central source of government funding.\textsuperscript{68} Indeed, the principal instigators of concern about acid rain effects in the United States were forest pathologists who received most of their resources from the State of North Carolina and a very small portion from the Department of Agriculture.\textsuperscript{69}

Nongovernmental organizations and industry groups were also invited to help assess the science of ozone layer depletion by becoming members of advisory committees set up by the EPA.\textsuperscript{70} During the few years just prior to DuPont's announcement that it supported negotiations aimed at developing an international protocol, EPA conducted a series of workshops and studies with industry on various aspects of this issue that "altered the playing field" and may have helped to change corporate views on CFC regulation.\textsuperscript{71} Similar kinds of interaction took place between government and corporate entities denouncing acid rain projects (such as the Antarctic ozone hole study) that industry helped to fund. Interview with Robert Watson, January 22, 1996, Washington, D.C.


\textsuperscript{68} Interview with Myron Uman, January 23, 1996, Washington, D.C.

\textsuperscript{69} Interview with Myron Uman, January 23, 1996, Washington, D.C.

\textsuperscript{70} Interview with EPA staffer Stephen Anderson, January 19, 1996, Washington, D.C.

\textsuperscript{71} Interview with John Hoffman, January 22, 1996, Washington, D.C.
regulation. However, increased cooperation in scientific research had an important effect in the ozone layer discussions that was notably absent in the acid rain case. Over time, greater scientific and technical coordination between government officials and the CFC industry served to integrate further the existing policy network. From DuPont's perspective this occurred by creating a small, tightly knit policy making community, the members of which became more open to alternative viewpoints. And, after the surprising news of the ozone hole discovery in 1985, a convergence of values occurred among environmentalists, CFC industry representatives and administration officials. Joe Steed, a senior manager at DuPont suggested that, "Everybody kind of knew each other...there were some common values being that we would really like to figure out what's going on..." Joe Glas described the effects of the policy coordination this way, "From my estimation there was a good forum for communication between the U.S. government, academic and industry scientists." Finally, Robert Watson, one of the leading scientists on the issue stated that during this time, "we were learning to talk each other's

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72 For example, the EPA did some preliminary work with the Electric Power Research Institute on the Massive Atmospheric Transport Experiment (MATEX) before it was cancelled because of concerns about the safety of the radioactive tracers. Interview with Courtney Riordan, January 16, 1996, Washington, D.C. Riordan headed the Office of Environmental Processes and Effects Research at the EPA.

73 Interview with Joe Steed, January 10, 1996, Willmington, Delaware.

74 Interview with Joseph Glas, January 26, 1996, Willmington, Delaware.
language and trust each other."75 Thus, coordination and cooperation based on mutual trust developed between the various groups within the policy network formed around the problem of ozone depletion to a level that was simply not reached by the acid rain policy network.

One important effect of the increased trust ties between industry representatives and government officials was to enable state decision makers to shape the perceptions of corporate representatives and thereby garner support for new policies. John Hoffman, one of the key EPA officials involved in these discussions, recounts the process this way, "We started to work with a lot of people and different user groups in a manner that lead them to break off from just saying no."76 The success of the EPA in getting chemical company officials to look at ozone depletion as a serious problem if CFC production kept increasing was also a function of the fact that this agency did not have to consult representatives from a large number of associations and companies with disparate and often competing interests. As already noted, the vast majority of the groups brought into this program of consultation shared the same fundamental concerns about the availability of CFCs, or acceptable substitutes, at reasonable costs. Thus, the existence of a strongly developed anti-regulation associational system with an eventual convergence of values among

75 Interview with Robert Watson, January 22, 1996, Washington, D.C.
76 Interview with John Hoffman, January 22, 1996, Washington, D.C.
its members contributed to the development of a highly integrated policy network. This network heightened the policy influence of corporate interests and mid-level EPA officials seeking to regulate the chemicals responsible for destroying the ozone layer.

Before examining the empirical evidence to gauge how much influence societal groups had in these two cases, it is necessary to highlight in broad terms the power configuration of the two policy networks in existence. Not all interest groups were granted the same respect, legitimacy, access to officials and financial assistance by the Reagan administration. Moreover, throughout the two terms that Reagan was president, there were discernable shifts in the power relations that defined the two policy networks in question. This brief overview aids in the analysis of which particular groups were able to have their voices heard and taken into consideration when the administration formulated its response to these environmental problems.

IV. Societal Interests and the Reagan Administration

Upon coming to power the Reagan administration brought to the White House a staunchly conservative agenda. The ideological principles upon which this agenda was based were generally supportive of large corporate interests and goals and considered anathema to the social welfare and labour sectors of American society. At the top of Reagan's list of priorities was the perceived need to get rid of big government while making America stronger by enhancing national defence capabilities. This was
ultimately translated into a commitment to rebuild the military, a desire for energy self-sufficiency by utilizing domestic coal resources, a reduction in taxes, and a decrease in domestic spending to reduce the deficit and lower government regulation. Such policy initiatives were quite well received by the industrial and business interests that were hostile to government regulation and seeking less interference in their affairs. These are the same private interests that accounted for much of the support Reagan received during his 1980 presidential campaign.77

Following a strongly conservative agenda, this administration was certainly more sympathetic to the concerns of industrial groups. One way that Reagan demonstrated a propensity to favour corporate groups was by appointing members of such interests to key bureaucratic positions. This administration made it a habit of appointing people to regulate the industries, or sectors of the economy, from which they had just left. For example, the former president of Piper Aircraft, J. Lynn Helms, was made head of the Federal Aviation Administration. C.W. McMillan, a former lobbyist for the National Cattleman's Association, was given the responsibility of meat labelling and other such regulations at the Department of Agriculture. A former top lawyer for the Chicago Board of Trade, Philip Johnson, was put in charge of the government body that regulated economic investment.78

77 Kenski, 83.

This favouring of industrial interests found its way into the environmental protection area as well. The fact that two senior EPA officials, Kathleen Bennett and Anne Burford (the administrator), had fought government regulation for large corporations before coming into government, has already been noted. In addition, Rita Lavelle, EPA's assistant administrator for Solid Waste and Emergency Response, formerly held a position at Aerojet-General Corporation which had been accused of violating toxic waste disposal laws. Finally, EPA's chief of staff, John E. Daniel, was a former lobbyist with the Johns-Mansville Corporation and the American Paper Institute.

With such extensive personnel overlap between the public and private sectors during Reagan's time in office it is not surprising that officials in this administration generally tended to share the same norms and values of people in corporate America. The values that underpinned Reagan's commitment to government de-regulation, tax cuts, deficit reduction and increased domestic energy use were

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80 Dugger, 42.

81 As noted above, the ozone hole discovery in 1985 did briefly evoke a concern for human health and environmental protection in administration officials on this issue. No such event occurred in the acid rain case and, in general, the Reagan administration continued to hold business values on most other environmental issues. The next chapter provides a more detailed discussion of the values of administration and industry officials and how they shifted as the acid rain and ozone layer issues evolved.
often supported by industry officials in the coal, auto, utility and chemical industries. Reagan's emphasis on values such as individualism, freedom, efficiency, materialism, science and technology and economic growth fit well with corporate officials that opposed public policy based on a concern for future generations, globalism, equality, conservation and preservation of the environment.

This value congruence meant that administration officials were much more willing to grant industry representatives opportunities to provide policy input. In addition, having granted industry this access, administration officials were more likely to find common ground with corporate executives when formulating policy than with environmentalists whose values they did not share. For example, at one point Ray Arnett of the Department of Interior informed environmental leaders in the early 1980s that they were restricted from meeting with the head of Interior, James Watt. Furthermore, only a "positive, constructive change of attitudes" on their part would permit a "meaningful dialogue to begin".82

Due to this sharing of values Reagan tended to favour these societal groups simply by supporting many of their policy preferences. This administration made the commitment to reduce oil dependency in the early 1980s by fostering the development of domestic energy sources such as coal because of the recent OPEC price induced shocks to the American economy. In his acceptance

speech on July 17, 1980, Reagan suggested that the resolution to the economic problems faced by the country lay in programs that permitted increased mining for coal and drilling for oil and natural gas. Such initiatives would undoubtedly benefit the industrial interests in these sectors of the economy.83 While responding to a question about the relationship between reducing oil dependency and environmental standards, the president revealed where his sympathies lay when he replied, "I'm not so sure that it means steadily higher fuel costs, but I do believe that this nation has been portrayed for too long a time as being energy-poor when it is energy-rich...one eighth of our total coal resources is not being utilized at all right now."84

The administration's favourable attitude towards industrial concerns, and its willingness to grant such groups access to the policy making apparatus, may be contrasted with its disposition towards environmental groups. Since government was the problem for Reagan, environmental protection was deemed to be fundamentally at odds with economic growth and prosperity. He made an attempt early on in his presidency to reverse or weaken many of the environmental regulations in existence.85 Openly hostile to environmentalists, Reagan promised to "curtail environmental extremists" and let the


85 Vig, 76.
steel and oil industries rewrite EPA's rules.\textsuperscript{86} This rhetoric was translated into action when he slashed EPA funding in his first term and reduced government outlays going to environmental groups.\textsuperscript{87} At the very least the input of environmental groups was not received in an unbiased manner and access to key decision makers such as Watt and Burford was restricted during this time.

V. Interest Group Resources and Power

During this time there existed significant differences in the resources possessed by the various interest groups involved in these two cases and, therefore, in their ability to take advantage of what access decision makers granted them. Generally, the very large corporate interests that constituted both of the anti-regulation associational systems had far greater financial resources than the opposing environmental groups. As such, corporate behemoths including the automakers, the utilities, the coal companies, and the chemical companies, with yearly revenues in the billion of dollars, had more money to devote to information gathering, liaison with government officials, mass media relations, campaign contributions, and litigation. The environmental groups were simply unable to match these resources. For example, at $3 million the Citizens for Sensible Control of Acid Rain, a utility association, spent more than any other industry group trying to

\textsuperscript{86} Carl Pope, "The Politics of Plunder", in Paul Boyer, ed., Reagan as President: Contemporary Views of the Man, His Politics, and His Policies. (Chicago: Ivan R. Dee, 1990), 183.

\textsuperscript{87} Vig, 79.
influence Congress in 1986. Representing a coalition of Midwest utilities and America's two largest coal producers, this organization spent more than $5 million from 1983 to 1988 to sideline acid rain bills. It also gave almost $23 million to congressional campaigns during this time period.

However, soon after Reagan became president, there began a gradual shift in the power configurations of the ozone layer and acid rain policy networks. It is difficult to quantify in precise terms the extent of these power shifts but some discernable trends can be highlighted. The radical pronouncements made by officials in the Reagan administration about the need to curtail environmental extremism precipitated a huge public outcry that eventually bolstered the membership and financial resources of some environmental groups. The controversial policy initiatives taken by Interior Secretary James Watt and EPA administrator Ann Burford had a similar effect. During Reagan's first year, the Sierra Club saw its ranks swell by hundreds of thousands of new members. With ten of the nation's largest environmental groups recording more than one million members each in 1982, the ability of these organizations to influence the electoral process with volunteers

88 Gladwell, 50.


90 Public outrage was instigated by James Watt's efforts to promote oil, gas, coal and mineral development. Anne Burford was forced to resign along with 20 other EPA officials in March of 1983 when she refused to produce information regarding Superfund clean ups. Vig, 77.
and target voting was significant.\textsuperscript{91} Environmental groups were able to force the resignation of James Watt by approaching Congress with 1.1 million signatures demanding his dismissal; it was the largest citizen's petition recorded to that point in time.\textsuperscript{92}

Environmental interest groups also sought to shape policy making by generating and collecting information and ideas to influence the general public, members of Congress and executive officials.\textsuperscript{93} Environmentalists hired economists, engineers, biologists, and other professionals to increase their legitimacy and participate more effectively in debates over environmental protection and conservation.\textsuperscript{94} The ten largest environmental organizations issued a report in 1982 that criticized the Reagan's environmental record by outlining administration policy failures in the toxic waste disposal, pollution control, natural resource development and energy utilization fields.\textsuperscript{95} In addition, groups such as the NRDC, EDF and WRI often brought summaries of current ozone layer science before congressional committees and to government workshops.\textsuperscript{96}

The financial resources of these organizations also began to swell in the early 1980s making it easier for them to participate

\begin{itemize}
\item[\textsuperscript{91}] Kenski, 88.
\item[\textsuperscript{92}] Vig, 77.
\item[\textsuperscript{93}] Kenski, 86.
\item[\textsuperscript{94}] Short, 125.
\item[\textsuperscript{95}] Kenski, 87.
\item[\textsuperscript{96}] For example, see Miller, 1986.
\end{itemize}
in information collection, litigation, mass media relations and the campaign support of candidates in elections. During this period five environmental groups including the Sierra Club, Environmental Action, the Solar Lobby, Friends of the Earth and the League of Conservation Voters, formed political action committees and contributed more than $1.5 million for campaign purposes. By the time James Watt resigned his post at Interior in October of 1983, John Bookout, the president of Shell Oil, announced in an interview that the environmental movement was, "more determined...more active and better funded" than at anytime in the past, including the 1960s and 1970s. Similarly, a 1983 commentary on the environmental movement noted that, "These groups have evolved from a loosely-knit coalition of single-interest groups to a national power capable of influencing domestic policies."

As this administration's first term was coming to an end there was also a significant shift in the public's view of the acid rain and ozone layer problems. Changing public sentiments meant that this power resource of environmental groups seemingly increased, as greater numbers of people began to support CFC regulation and acid rain controls. A Harris poll conducted in 1985 found that the business community and the administration were at odds with public opinion, as 86 percent of Americans were opposed to relaxing the

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97 Kenski, 89.
98 Short, 125.
99 Kenski, 84.
Clean Air Act. Additionally, in 1980 approximately a third of all Americans were aware of acid rain as an environmental problem and what was causing it. Only three years later 63 percent of the people interviewed in a Harris poll said they knew of acid rain and 66 percent supported greater controls on SO₂ emissions. By 1985 over 90 percent of the American public was aware of the acid rain problem and a majority continued to call for legislation to address it.

Public awareness of the ozone layer and its possible destruction became widespread in the mid-1980s. The NRDC, EDF and Friends of the Earth endeavoured to educate the public about this issue in 1986 and 1987. The May 1985 discovery of the Antarctic ozone hole was covered extensively by the media as were congressional testimony during the mid-1980s, the results of the 1986 WMO/UNEP report and the wrangling within the administration over possible CFC controls in the summer of 1987. As a result, "By 1987, the ozone layer and its destruction became a widely-

100 Clarkson, 190.
101 Gladwell, 52.
103 Robert Collins, "And Still the Skies Rain Acid", (July, 1987), 156. Malcolm Gladwell (52) reports that by 1988 almost 100 percent of Americans were knowledgeable about the causes and consequences of acid rain.
discussed and well-known issue among American citizens.""}^{105

To the degree that favourable public opinion support enhances the power of societal groups, it would seem that during this time the power of environmental groups did increase.}^{106} Yet even in the face of shifting public sentiments on these issues, Reagan refused to give into such pressure and move in a direction desired by most Americans. As Richard Darman, a senior first-term Reagan White House aide argued, "...Reagan's programmatic agenda is simply not the majority agenda."}^{107} This certainly would explain Reagan's administrative presidency: the use of budgetary allocations to achieve policy goals instead of introducing new legislation.}^{108} Rather than fighting long and hard in a losing battle for legislation to relax or eliminate environmental regulations, Reagan chose to achieve the same policy objectives simply by slashing the EPA's budget and depriving it of the required human resources to fulfil its mandate. In this respect public opinion may not have significantly increased the power of environmental groups.}^{109

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105 Seaver, 58.

106 The appointment of William Ruckelshaus as EPA administrator in 1983 may be viewed as an attempt by the administration to respond to the great public outcry over the actions of Anne Burford as EPA head and James Watt as Secretary of the Interior.

107 Smith, 1988, 18.

108 Kenski, 78.

109 The election of Brian Mulroney as Prime Minister of Canada in 1984 dealt a blow to the pro-regulation contingency of the acid rain debate. In an effort to pave the way for free trade negotiations, and after adopting the recommendations within the Special Envoys' Report in 1986 which committed both countries to
Reagan simply chose to ignore these public sentiments and, at times, even worked in defiance of them.

In summary, the revitalization and growth in environmental organizations during Reagan's first term in office was significant but less dramatic when shown in relation to the power resources and policy influence possessed by industry groups. The gap between environmental and anti-environmental interest organizations in this regard decreased somewhat during this time, but a large gap certainly remained. So, for example, while environmental PACs contributed more than $1.5 million towards congressional campaigns in 1982 as noted above, this paled in comparison to the $14 million spent by groups opposing stronger environmental protection legislation. Industrial groups continued to have far more resources at their disposal with which to obtain political influence than did environmentalists.

more research on acid rain, the Mulroney government reduced the pressure on the United States to conclude an acid rain treaty. American environmental groups and politicians who were pressing hard to achieve some breakthrough with the administration lost an important external ally and their chances of success were decreased. Indeed, the NRDC advised the Canadians to reject the Envoy's Report and continue to press for significant acid rain emissions reductions. Interview with David Hawkins, NRDC official, January 25, 1996, Washington, D.C. This lapse by the Canadians did not outlive the administration. When it became apparent that the United States was having trouble fulfilling the obligations outlined in the Special Envoy's Report, Canada began to press again for significant SO\textsubscript{2} reductions. John Whitehead, Deputy Secretary of State, "Implementation of the Special Envoy's Report", Domestic Policy Council Meeting, Washington, D.C., (March 9, 1987). Nevertheless, this disruption in the pro-regulation acid rain coalition came at an important time and affected a power shift in this policy network.

Kenski, 89.
VI. Congress and Regional Politics

a. Acid Rain

Driven by interest group pressure or, on its own accord, Congress may influence the policy path the executive adopts in a number of ways. The Budget and Impoundment Control Act which created the Congressional Budget Office gives Congress a powerful instrument with which to oversee the budgetary process. In addition, hearings and investigations are used by members of Congress to ensure that the executive properly administers laws. Probably the most effective types of oversight include reviews of agency appropriations and the repeal of authorities.\(^{111}\) The EPA has often been faced by the threat of such sanctions.\(^{112}\)

Congressional influence in the policy making process is also achieved through the requirement that the Senate confirm key members of the executive branch as well as presidential appointments to federal courts.\(^{113}\) Congressional support is therefore of prime importance and rarely overlooked when an administration decides to take a policy initiative. This was especially the case in the 1980s because loosening party discipline and the fragmentation of power in Congress made it much more difficult for any administration, or congressional leader, to

\(^{111}\) O'Connor and Sabato, 195.

\(^{112}\) Interview with NRDC official David Hawkins, January 25, 1996, Washington, D.C.

\(^{113}\) O'Connor and Sabato, 196.
create the needed coalitions to pass major legislation. Well aware of this new legislative environment, Reagan was known to avoid petty or arduous battles on all issues except for those that he cared deeply about, or stood a strong chance of winning. For this reason it is important to understand where Congress weighed in on the acid rain and ozone layer issues as the policy processes developed during Reagan's time in office.

Above all else the defining feature of the domestic political process that characterized the acid rain debate was that it pitted different regions of the country against each other. On the question of SO₂ controls the country was divided as members of Congress were motivated by intense interest group pressure or more broad considerations of equity and justice. They came into conflict on the question of who should pay for a new regulatory program that would only benefit certain regions of the country. Steve Elsworth highlights this important aspect of the acid rain debate when he argues,

Acid rain is a good example of a problem that is fairly well understood and for which the technology of control, in the sense of a reduction of emissions exists. The main issue is not really the balance between costs and benefits of control, although it is often so represented. The principal source of controversy is who should bear the environmental costs associated with coal burning, and how and when those costs should be borne.

115 Smith, 1988, 55.

High polluting states well buffered from environmental damage opposed regulation, but insisted on a national tax if it occurred. Ironically, the Ohio Valley which produces most of the chemicals
Not surprisingly, given the range of competing powerful societal groups involved in this issue and the regional nature of the problem, Congress experienced a stalemate over the question of acid rain legislation until after Reagan left office. Over 70 bills addressing the acid rain problem were proposed in Congress by 1988. Yet no acid rain legislation was considered by the full membership of either the Senate or the House of Representatives by this date.


Low polluting states highly susceptible to environmental damage insisted on regulation that was based on the polluter pays principle. These states included New York, New Hampshire, Connecticut, Massachusetts, Pennsylvania, Minnesota, Vermont, Maine, Rhode Island, New Jersey, and Wisconsin. "Letter to Ronald Reagan from Attorneys General", (March 6, 1986).

Finally, states that were not thought to be susceptible to significant environmental damage in the near-term and were not great polluters were unwilling to pay the costs for a clean up program that would not directly benefit them and that addressed an environmental problem they had not participated in creating.

117 See "The Legislative Geography and Dynamics of SO2 Controls" in Appendix E showing the geographical division of states on the acid rain issue. "Generic Policy Question: Is a Major Sulphur Reduction Program to Control Acid Rain and Its Alleged Environmental Effects Warranted and Justified", Office of Management and Budget, Cabinet Committee on Natural Resources and the Environment. (September 21, 1983).

118 Marshall Wilcher, The Politics of Acid Rain: Policy in Canada, Great Britain and the United States. (Avebury: Aldershot, 1989), 60. The regional and societal interests can be discerned most clearly by examining some of the various bills introduced into Congress during the 1980s. In 1983 Senator Randolph from West Virginia and Senator Specter of Pennsylvania, two of the largest
The regional battles in Congress responsible for the political stalemate were played out in the committee system where most of the legislative work takes place. Of particular importance to the development of the acid rain debate in Congress was the House Energy and Commerce Standing Committee chaired by Representative John Dingell of Michigan from 1981 to 1992. Dingell was a staunch ally of the automobile industry which was opposed to further NOx controls. As chair of the House committee, Dingell had a great deal of control over which bills would be reported to the House floor for a vote. In cooperation with other pro-industry colleagues, he was often able to kill pro-regulation bills coming from the House Subcommittee on Health and Environment, chaired by Representative Henry Waxman of California, a strong supporter of SO2 regulation.119

119 Gladwell, 50.
Similarly, the Senate Environment and Public Works Standing Committee\textsuperscript{120} which introduced a number of major acid rain bills, was blocked in its efforts by Senate Majority Leader Robert Byrd of West Virginia. He opposed regulation and had the power to determine the legislative agenda in this house.\textsuperscript{121} Serious debate on this issue was forestalled by Byrd until 1989 when the Bush administration submitted proposals for an acid rain program. Shortly thereafter Robert Byrd was replaced by the more environmentally active Senator George Mitchell of Maine. Thus, for the two terms that Reagan was president, Congress remained deadlocked on the question of acid rain controls and did not put significant pressure on the administration to take a leadership role on this issue.

b. Ozone Layer Depletion

Regulation of ozone depleting substances was a different story. Importantly, at the domestic and international levels there was no regional dimension to the conflict. The harmful effects of ozone depletion were believed to touch everyone, whether through increased skin cancer rates, or decreased agricultural and marine productivity. Moreover, the regional concentration of the CFC

\textsuperscript{120} Its members included John Chaffee (Rhode Island), Patrick Moynihan (New York), George Mitchell (Maine), and chairman Robert Stafford (Vermont).

\textsuperscript{121} Interview with Bill Becker, January 24, 1996, Washington, D.C. Bill Becker headed the State and Territorial Program of Air Administrators during this time. Also see Howard and Perley, 221.
producing and consuming industries in the United States was insignificant. By the mid-1980s bipartisan support in Congress existed for the U.S. administration to take a leadership role in the creation of an international treaty with strong controls on the production and use of CFCs. For example, early in the summer of 1986 a resolution calling for CFC reductions of 50 percent, with additional phase-outs in the future, passed the Senate by a vote of 80 - 2.¹²²

Interest group pressure applied directly on the administration, or through congressional channels, seems to have factored significantly into the policy making process in both of these environmental cases. The plausibility of this explanation is demonstrated first by highlighting some of the ways in which these groups attempted to shape policy and then by providing empirical evidence of such influence.

VII. Receptivity of the Reagan Administration to Interest Group Pressure

a. Ozone Layer Depletion

Early in the debate over CFC controls, industry groups were quite involved in lobbying government to prevent the introduction of such regulation. Shortly after it was created, the Alliance for a Responsible CFC Policy was instrumental in having over 2000 letters sent to the EPA protesting its proposals to control

nonaerosol uses of CFCs as published in an advanced notice in the Federal Register in October of 1980. Since only four of the comments received by the EPA supported such action, Paul Brodeur suggests that this lobbying effort caused the agency to abandon the schedule it had set for itself to issue new rules in the spring of 1981.\footnote{123} For reasons examined in greater detail in the next chapter the CFC industry did finally publicly announce its support for an international protocol limiting the production of these chemicals in September of 1986 and privately made this clear to EPA officials in 1985.\footnote{124} With this announcement the U.S. CFC industry, including producers and consumers of these chemicals, sent a clear signal to the Reagan administration that it supported the regulation of ozone depleting substances.\footnote{125}

After having won the battle in the late 1970s to prohibit CFC use in aerosols, environmentalists thought the environmental danger had passed and stopped lobbying the government on this issue until


\footnote{124} The Alliance for Responsible CFC Policy announced its support of U.S. participation in international talks to regulate CFCs on September 16, 1986. A few weeks later DuPont came onside and also gave its support for these negotiations. Cagin and Dray, 305.

\footnote{125} It is important to highlight the crucial difference in the policy preferences that developed between members of the two anti-regulation associational systems under study here. While the anti-regulation acid rain contingency stood firm in opposing SO\textsubscript{2} controls throughout Reagan's tenure, the CFC industry eventually came out and supported controls and, in fact, attempted to move the administration in this direction at important junctures in the policy process. Recognition of this difference is central to any discussion of whether interest group activity shaped the way the Reagan administration responded to these two environmental threats.
Reagan's second term. In November of 1984, the NRDC took direct action and filed suit against the EPA for failing to fulfil its legal obligations set out in Section 157 of the Clean Air Act and regulate CFC emissions. In addition, after the Alliance instigated an interagency debate over the U.S. negotiating position in 1987 by contacting the Commerce department, environmentalists called Vice President George Bush's office and suggested to his campaign staff that an international ozone policy would boost his chances in the upcoming elections. Adopting more publicity grabbing stunts, Greenpeace lodged protests at DuPont board meetings after having bought stocks in the company. Members from this organization also jumped fences at DuPont production facilities and put up billboards displaying pictures of the CEO along with messages indicating that he was personally responsible for ozone depletion. In this way Greenpeace hoped to remove an important source of pressure on the administration that they believed was preventing it from moving towards an international treaty on CFC controls.

Congress also became quite active on this issue as negotiations for an international agreement developed. Just before the second round of negotiations leading to the Montreal Protocol


127 Roan, 200.

128 Interview with David Stirpe, a senior official with the Alliance for a Responsible CFC Policy, January 18, 1996, Arlington, Virginia.
began, Senators Chafee and Baucus introduced legislation (S.570 and S.571) that would have cut CFC use domestically by 95 percent and would have restricted imports containing or manufactured with these chemicals in the event that international talks failed. Then, in January of 1987 at a congressional hearing on the subject, Senator Chaffee criticized the head of the U.S. negotiating team, Richard Benedick, for backing-off during the talks in Geneva. Chaffee declared, "Frankly, I think we have to push you folks and, if this fails, go it alone." Such measures, along with the Senate resolution noted above calling for the eventual elimination of CFCs, sent an unmistakable signal to the administration.

There is evidence that the concerns of domestic political forces influenced key decision makers during the important meetings in which CFC policy was formulated. At the Domestic Policy Council meeting in 1987, where EPA administrator Lee Thomas was instructed by Reagan to seek a 50 percent reduction in CFC production rates, the State Department made its case for a strong treaty by calling attention to strong bipartisan support for such a position in Congress. On another occasion, during a meeting between the EPA and concerned interest groups, government officials noted that the EPA was under court order to issue an Advanced Notice of Proposed

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131 Benedick, 66.
Rulemaking (ANPR) on CFC regulation, or make the decision not to propose regulations by May 1, 1987. As part of the NRDC lawsuit settlement, the EPA was required to organize the workshops that were eventually integrated into the Montreal Protocol negotiation process. In this respect then, as two of the key EPA officials working on the ozone layer issue conceded in interview, the legal action taken by the NRDC in 1984 forced this government agency, and the Reagan administration more generally, to take a leadership role on the problem of ozone depletion.

However, influence did not flow in only one direction. When Alan Miller from NRDC first let it be known that he intended to file suit in 1981, he was soon persuaded by EPA officials that the timing was inappropriate. He was told that the agency might simply argue that the scientific basis for pursuing controls no longer existed, thereby killing the ANPR. Miller was also informed that filing suit that early might damage the pace of international negotiations by undermining the State Department's strategy and credibility. For this reason the NRDC held off on the lawsuit until officials from the EPA quietly communicated to him that a

132 "EPA - Meeting on Stratospheric Ozone Depletion Regulations", (February 18, 1987), 1.

133 Litfin, 86.

134 Confidential Interview, January 17, 1996, Washington, D.C. Confidential Interview, January 29, 1996, Washington, D.C. Sharon Roan (196) argues that the aggressive Stratospheric Ozone Protection Plan the EPA adopted in 1986 to create a CFC regime was actually the program the NRDC devised and lobbied the administration to embrace.
more favourable environment existed in November of 1984.\textsuperscript{135} Once the NRDC adopted this strategy, officials at the EPA were able to suggest to the administration in policy meetings that even if the international negotiations failed, the EPA would have to regulate CFCs domestically because of the lawsuit. This would ultimately hurt the competitive position of U.S. producers.\textsuperscript{136} Interest group influence then, was of considerable importance to the final policy outcome. It was a product of close cooperation between NRDC officials and those favouring some type of CFC regulation within the EPA.\textsuperscript{137}

There is also strong evidence, provided by key scientific, corporate and government actors involved in this policy process,

\textsuperscript{135} Interview with Alan Miller, January 26, 1996, College Park, Maryland. Also see Cagin and Dray, 259.

\textsuperscript{136} Interview with Steve Seidel, a policy analyst at the EPA, January 24, 1996, Washington, D.C. Even before the lawsuit became an issue there was an internal battle within the EPA between the Toxics Office and the Policy Office. The Toxics Office had planned to simply kill the ANPR by arguing that the science no longer justified going ahead with domestic regulation. However, senior EPA officials concerned that current growth rates of CFC use would mean significant ozone depletion in the future had the ozone issue transferred to the Policy Office and kept it alive within the EPA until this agency began taking more of a leadership role on it. Seth Cagin and Philip Dray, Between Earth and Sky: How CFCs Changed Our World and Endangered the Ozone Layer. (New York: Pantheon Books, 1993), 258, 259.

\textsuperscript{137} This does not, however, imply that environmental groups only obtain influence when they are given the opportunity to cooperate closely with EPA officials. Rather, according to an official within this agency, the EPA administrator often asks during policy meetings how the NRDC and Environmental Defense Fund (EDF) would likely react to various proposals. Evidently, the concerns of these environmental groups are, to a greater or lesser degree, taken into account in these meetings even when none of their representatives are in attendance. Confidential Interview, January 26, 1996, College Park, Maryland.
that industry support for the international negotiations was crucial in pushing the U.S. administration towards the regulation of CFCs. A senior NAS official who was involved with a number of the reports on ozone depletion stated simply that, "The reason the Montreal Protocol was possible was because DuPont, the leading manufacturer in the United States, changed its policy and decided it was going to go to the other side." Similarly, a senior official at the EPA during this time indicated in an interview that DuPont's support for regulation was critical in paving the way to the Montreal Protocol.

Not surprisingly, an official at the Alliance for a Responsible CFC Policy believes that his industry association had a great deal of influence on policy making in this case. The Alliance became respected by officials in the administration because it was able to develop enough of a consensus among the different members of the CFC industry community to become its "voice". Government officials did not have to double check with other members of this coalition of interests to verify that what the Alliance argued was accepted by all.

The decision by industry to support international CFC regulations was very important because it signalled that the

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138 Confidential Interview, January 23, 1996, Washington, D.C.
139 Confidential Interview, January 22, 1996, Washington, D.C.
greatest bastion of resistance to CFC controls was gone. In describing the effect of DuPont's announcement a senior environmentalist noted, "It changed everything. It gave Lee Thomas [EPA administrator] the freedom to be a leader because...he looked at this and it was like - why not go for a full phase-out?"\textsuperscript{141} Another senior official at the Alliance noted that one could hear people in Congress say, "...my God, even industry is supporting regulation."\textsuperscript{142}

Industry officials took a more direct role in maintaining the United States' momentum during the negotiations. Although they were successful in preventing binding CFC controls from coming into effect in Vienna in 1985,\textsuperscript{143} they did convince the administration, in the final hours of talks, to abandon their opposition and sign this convention.\textsuperscript{144} To the extent that this international agreement laid the groundwork for U.S. leadership before the Montreal Protocol, industry played a crucial role in keeping the Reagan administration quite active on this issue.

Many scientists, policy makers and NGO officials recognize that interest group pressure, especially the lawsuit by the NRDC and the CFC industry's policy reversal, was instrumental in

\textsuperscript{141} Confidential Interview, January 26, 1996, College Park, Maryland.

\textsuperscript{142} Confidential Interview, January 18, 1996, Arlington, Virginia.


\textsuperscript{144} Benedick, 46.
maintaining the Reagan administration's efforts to find a solution to this environmental problem. Although it is not possible to conclude that the Montreal Protocol would not have occurred without the activity of these groups, their lobbying did prevent the U.S. administration from confining its role in this issue to sporadic scientific research and little more.

b. Acid Rain

The debate in the United States over the possible regulation of the chemicals causing acid rain was also characterized by quite intense interest group lobbying of government officials.\(^{145}\) Examination of the empirical evidence suggests that societal interests did indeed play a significant role in determining the way the Reagan administration responded to this environmental threat. However, in contrast to the ozone layer case where industry and environmental groups eventually came together and supported some form of CFC regulation, there was never any such convergence of interests in the acid rain case. Rather, business groups concerned about the control of SO\(_2\) and NO\(_x\) emissions did not, as a unified whole,\(^{146}\) deviate from their insistence that the control of these

\(^{145}\) Because acid rain became so politicized in the United States and Canada, the final decision regarding SO\(_2\) controls became the purview of senior administration officials while Reagan was president. Mid-level officials had little role in determining whether the United States took the lead in responding to concerns about acid rain. Therefore, only the receptivity of senior decision makers to interest group lobbying is examined in this chapter.

\(^{146}\) As noted above, some industries hoping to influence the content of any future acid rain legislation came out in support of
chemicals would be prohibitively costly to society and of questionable benefit to the environment. Under enormous pressure from business interests and lacking the capacity to direct policy because of an anti-regulatory coalition made up of several powerful but competing groups, government officials refrained from taking a leadership role to reduce acid deposition. Government officials possessed the anti-environmental values common among corporate decision makers and therefore had little motivation to step outside of this common normative framework. Thus, instead of taking concrete action to address acid rain, the Reagan administration continued to support scientific research into acid rain processes including the Clean Coal technology program called for in the 1986 Special Envoys' Report.

Industry groups employed several different strategies to convince administration officials that the regulation of acid rain causing chemicals was unjustified. The utility companies took advantage of their wide access to American households and enclosed their objections to acid rain legislation in letters sent out with monthly bills mailed to customers.\(^\text{147}\) The Edison Electric Institute such regulation and stipulated the conditions under which a control program would be acceptable. The low-sulphur coal industry spent much more time insisting on flexible reduction strategies than on voicing opposition to SO\(_2\) controls. As well, in 1988 high-sulphur coal companies and miners supported an initiative by Robert Byrd that included the adoption of a scrubber program. This behind-the-scenes proposal was, however, rejected by the utilities. Courtesy Don Munton, International Studies Program, University of Northern British Columbia.

founded the Alliance for Balanced Environmental Solutions with the mission of educating the public about acid rain and combating SO₂ regulation. Another utility industry took a more direct approach in 1984 on the eve of the presidential elections and sent a memo to the White House that calculated the electoral losses that would accrue to the Reagan team if acid rain legislation were to pass.

The members of the pro-regulation associational system were also very active in lobbying the administration on this issue. In order to engage public opinion on the question of emission controls, Greenpeace scaled the large SO₂ emissions smokestacks in Ohio, Indiana and Arizona, in February of 1982. NRDC once again resorted to litigation to achieve its goals and attempted to sue the EPA for violating provisions of the Clean Air Act by not setting appropriate air pollution controls. Aiding U.S. environmental groups in their efforts was the Canadian government which quickly became disenchanted with the attitude of the Reagan administration towards the problem of acid rain. The Canadian public relations campaign in support of SO₂ controls lapsed for a couple of years after Brian Mulroney was elected prime minister in 1984. But once it became apparent that the United States was not

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149 Gladwell, 50.

150 Park, 1987, 203.

151 Interview with NRDC official Elizabeth Barratt-Brown, January 30, 1996, Washington, D.C. The NRDC was joined in these efforts by various northeastern states and Canada.
fulfilling the obligations stipulated in the Special Envoy's Report of 1986, the Canadian government resumed its lobbying. Canadian officials began again calling for a major acid rain control program in the order of 50% reductions of U.S. SO$_2$ emissions.\textsuperscript{152} Except for a brief hiatus in the mid-1980s then, Canada employed a number of strategies to pressure the Reagan administration to take action on acid rain.

Empirical evidence of interest group activity in the acid rain case demonstrates that industry groups were more successful in gaining access to important officials and in shaping the policy process than were environmental groups. This helps to explain why the Reagan administration did not take a leadership role on the question of SO$_2$ controls, but rather, disrupted domestic and foreign efforts towards this end at every turn.

A general indication that the views of interest groups and members of Congress were taken into account during the policy process is provided by an examination of EPA administrator William Ruckelshaus' schedule of meetings which occurred immediately before he approached the Cabinet with his proposed plan of a 25 percent reduction in SO$_2$ emissions. From May 23 to September 21, 1983 the EPA administrator devoted nearly all of his time to hearing the concerns of the various groups and government officials associated with this issue. Over this period of four months, he attended 69

\textsuperscript{152} Ralph C. Bledsoe, "Memorandum for the Domestic Policy Council Meeting - Implementation of the Special Envoys' Report - Recommendation 1: Demonstration Program Funding", (March 6, 1987).
scheduled meetings where he spoke to scientists, lobbyists or legislators. Of the 69 meetings Ruckelshaus conducted, 26 were reserved for members of Congress, 22 for interest groups, nine for administration officials, eight for scientists, and only four for Canadian government officials.\textsuperscript{153} Importantly, of the 22 meetings that lobbyists had with Ruckelshaus, only five were devoted to environmental groups and the other 17 were reserved for industry representatives.

Access to decision makers should never be construed as being equivalent to influence on decision making. Nevertheless, a measure of the amount of access a group had to the policy making process is an excellent indication of the opportunities that existed to shape policy. The fact that one of the key decision makers in the acid rain case granted members of Congress and industry groups much more time to express their views and policy preferences than he did representatives of environmental groups or Canadian officials is a good indirect measure of industry's greater influence.\textsuperscript{154}

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\item[\textsuperscript{154}] Further evidence that the views of business concerns were taken into consideration at the higher levels of the Reagan administration is derived from a Cabinet Council memorandum circulated to those attending the Domestic Policy Council meeting in 1983 where U.S. policy on acid rain was to be reviewed. This memorandum noted that the claims of environmental damage from acid rain made by the Office of Science and Technology Policy (OSTP) and environmental groups had not been scientifically documented. It then went on to highlight the largely negative consequences of any legislation that proposed to significantly reduce SO\textsubscript{2} and NO\textsubscript{x} emissions. According to this memorandum, the costs of such a program would be far too high and there would be a devastating
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Other evidence seems to indicate that industry interests were granted more weight in policy making than were those of environmental groups. In particular, it was George Shultz as Secretary of State in 1983 who defended the go slow approach adopted by the administration on this issue. Describing the U.S. policy towards acid rain at this time Shultz stated, "Foot dragging is one word for it. Another word is being very careful before you commit to spending billions and billions of dollars. And I think care is warranted under the circumstances."\(^{155}\) This was the same person who, before coming to the White House, was the former president and director of the multinational firm Bechtel which fully owned Peabody Coal Company, the nation's largest coal producer.\(^{156}\)

One indication of congressional influence over the policy process is suggested by the similarity between the Special Envoy's Report adopted by the Reagan administration and the legislation introduced by Senate Majority Leader (and chairman of the Appropriations Committee) Byrd of West Virginia a few years

impact on coal miners since thousands of high sulphur coal mining jobs would be lost. Boggs, 11.

Thus, not only were representatives of high sulphur coal miners granted significant access to policy makers, but the arguments presented to the Cabinet members were framed in terms more favourable to the coal industry than to the environmental community. It is difficult to infer from this memorandum a specified amount of policy making influence, but the plausibility of the interest group explanation is certainly enhanced.


\(^{156}\) Gould, 37.
earlier. The "Arctic Deposition Mitigation and Research Act of 1983" (S.454) and the "National Coal Science, Technology and Engineering Development Act" (S.1925) called for an acceleration of research and the introduction of concrete measures to alleviate the effects of acid rain. The Special Envoy's Report and Senator Byrd's proposals are also alike in that they both advocated the development of specific clean coal technologies to the point of commercial application. Neither called for significant decreases in acid rain causing chemical emissions.\footnote{157} It appears that the recommendations made by the acid rain envoys were consciously restricted in scope so that the proposals would not go beyond what the Senate Majority Leader, and the interests he represented, would accept as permissible.\footnote{158} A former lobbyist with experience in both cases indicated much the same when he stated,

Reagan did not go with [i.e., support] Ruckelshaus because of coal. Coal politics are unbelievable. West Virginia, Bob Byrd....was chairman of the appropriations committee and the Majority Leader. Go back and look at

\footnote{157} The Special Envoy's Report itself highlights the important role played by societal interests in making acid rain regulation difficult to achieve. It states, A significant impediment to the development of a U.S. consensus on acid rain is the high cost of the available control options. Because the impacts of different options fall on different interest groups, political positions have become polarized, and it has become increasingly difficult to find a common ground for action. Lewis and Davis, 29.

\footnote{158} There was one occasion when pressure from a block of members of Congress was successful in getting the executive to take some regulatory action on acid rain. As a result of a lawsuit filed in 1984 by seven northeastern states the EPA was ordered to require seven Midwest and border states to reduce their emissions of SO$_2$. Park, 1987, 215.
the coal states in Congress. This is the answer on acid rain.  

Finally, members of the anti-regulation acid rain associational system were able to block repeated attempts to study various emissions control proposals by putting pressure on the EPA itself when various research proposals were under consideration. As one EPA office head confided in an interview, a number of experimental programs this agency was examining were shelved because of interest group or congressional pressure. On one occasion in 1983 the EPA looked into testing what effect SO₂ emissions would have on ecosystems by converting some coal burning facilities in the Midwest into gas-fired boilers for a short period of time. However, this avenue of research was "pretty much dropped" because of fervent opposition from the utilities. This agency also put aside its preferred strategy of targeting the worst polluters for new controls because,

...there were pretty strong political forces in the Midwest that said no way - that you are not going to target anyone - if you are going to have sulphur reductions you are going to have to have a national program.  

Consequently, the ability of the Reagan administration to direct policy as it wished was severely constrained by the lobbying efforts of the industries opposed to acid rain controls.

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159 Confidential Interview, January 18, 1996, Arlington, Virginia.

160 Confidential Interview, January 16, 1996, Washington, D.C.

161 Confidential Interview, January 16, 1996, Washington, D.C.
Relative to the anti-regulation contingency active on this issue, environmental groups were weak and ineffective in moving the administration towards adopting significant air pollution controls. While environmental groups seemed to have won the battle over public sentiments on acid rain, they ultimately lost the war in the policy process because Reagan was content to ignore the will of the American people on this issue. Litigation efforts were likewise of little assistance in garnering policy making influence for the environmental community. Despite repeated efforts to make the Clean Air Act as strict as possible for the utilities, the only real, albeit minor, success was had in the early 1980s when the NRDC won a settlement that required the Tennessee Valley Authority to reduce its SO₂ emissions by half.

A close examination of the Reagan administration's response to the acid rain and ozone layer environmental problems suggests that interest groups successfully moved the administration to take a leadership role in one case and not in the other. Important differences in the policy networks that formed around these two issues affected both the capacity of state actors to direct policy independently and the ability of social groups to shape the policy making process. On acid rain a very powerful but specialized anti-regulation associational system opposed SO₂ and NOₓ controls for the duration of Reagan's time in office. Due to its diverse nature and

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162 Interview with David Hawkins, January 25, 1996, Washington, D.C.

163 Interview with NRDC official Elizabeth Barratt-Brown, January 30, 1996, Washington, D.C.
great power resources this coalition successfully decreased the ability of decision makers to affect policy change. It ultimately overshadowed the much less influential pro-control environmental community.

The policy network that formed around the problem of ozone layer depletion differed from the acid rain one in significant ways. Most importantly, the unity of the anti-regulation industry coalition around a few dominant autonomous associations, and its ability to integrate complex scientific information, increased the capacity of the state and enabled it to interact fruitfully with business interests and take a leadership role on this issue. Equally important was industry's support for the regulation of CFCs. Such support removed a major political obstacle for policy makers favouring a strong CFC control regime. In addition, joining the now cooperative business coalition was a powerful environmental community that, in contrast to the acid rain case, had a great deal of success after 1984 in keeping the Reagan administration moving toward some form of CFC regulation. Lastly, it became clear as Reagan was completing his second term of office that there was strong bipartisan support in Congress for efforts to protect the ozone layer. This support was noticeably absent in the case of acid rain controls.

VIII. Interest Group Politics and the Impact of Ideas

There is a general recognition among scientists, interest group representatives and government officials that environmental
policy should be guided, and even directed, by scientific investigation. Thus, when the science indicates that an environmental problem exists and is causing significant havoc to one or more ecosystems the state has an obligation to take action and address the issue. If not always in practice, most Reagan administration officials agreed with this general principle. Reagan himself indicated his support for this view of scientific inquiry and the environment in several speeches and public statements. On one occasion he declared,

In short, we believe that you can be a friend to the people at the same time that you're a friend to the land. And we're convinced that working through the wonders of science and technology, the human mind can enable our economy to grow, providing new jobs for millions, while at the same time enhancing our precious natural resources.\footnote{Ronald Reagan, "Remarks to the National Campers and Hikers Association in Bowling Green, Kentucky - July 12, 1984", Ronald Reagan: Public Papers of the Presidents of the United States. (Washington, D.C.: United States Government Printing Office, 1987), 1038.}

However, SO\textsubscript{2} and NO\textsubscript{x} industry lobbying ensured that the little support that existed within the Reagan administration to address acid rain deposition was never able to push the United States into taking a leadership role on this issue. This was the case even though this environmental problem was grounded in a great deal of scientific understanding and consensus. Moreover, even in the face of much scientific uncertainty the United States took strong action to create an international ozone layer regime to halt the destruction caused by CFC emissions. It is therefore evident that interest group pressure can lend legitimacy to new scientific ideas.
about environmental problems or, render them inconsequential during
the policy making process.

In the last part of this chapter the detailed investigation of
the role that societal groups had in these two cases informs a
discussion of the receptivity of state actors in the Reagan
administration to new ideas and information. As such, an important
link between the "politics" surrounding an issue and the influence
of ideas on decision making is forged to highlight why certain
scientific ideas about the causes and effects of ozone depletion
were embraced by policy makers while other ideas concerning acid
rain were repeatedly ignored. The next part of this analysis will
not attempt to devise a new theoretical formulation to highlight
these processes but will simply try to elucidate some of the ways
in which ideas and interests interacted to affect policy making.
Future research in this area may benefit from these insights.

Most scholars argue that scientific knowledge and ideas impact
policy making when they address the uncertainty that decision
makers face and, specifically, when they decrease that
uncertainty. Scientific information provides a "road map"

165 There are some advantages to the ideas approach that
dress many of the weaknesses associated with epistemic community
theory. Basing the analytical framework on ideas means that one
need not be as concerned with the purveyors of ideas as a crucial
variable in explanations of state behaviour. The concept of ideas
is also more readily employed as an intervening variable which may
make for more accurate accounts of policy making in a milieu
characterized by the complex interchange between a number of
important variables such as ideas, institutions and interests.
There are however, some obstacles that intercede in any
attempt to explicate the relationship between ideas or knowledge
and the policy making process. In particular, a serious drawback
with basing a theoretical framework on the role played by ideas in
utilized by policy makers when solving problems.\textsuperscript{166} The epistemic community literature suggests that to understand how community members reduce uncertainty it is necessary to investigate the role that scientific consensus plays in empowering the purveyors of information and giving them an authoritative status so that decision makers accept their "road-map" as applicable to the problem at hand. The theoretical quandary arises because the epistemic community approach (and the ideas literature) does not adequately define when a consensus has been achieved. More importantly, it is not able to account for the many situations in which policy cooperation is achieved in the absence of scientific consensus (i.e., the ozone layer case) or those occasions when cooperation fails even though scientific consensus on an issue

the decision making process is the danger of portraying institutions, and even actors, as little more than receptors of ideas. Theories that place too great an emphasis on the power of ideas often make the incorrect assumption that ideas are "free floating" or that any idea is as likely to be taken up as the next. Ultimately, the greatest weakness with the study of ideas, as with the epistemic community literature, concerns the underdeveloped, or even nonexistent, link to the interests of state actors. Much of the literature in these two fields at least implicitly recognizes that ideas have little impact if they are not in accord with decision makers' general interests and beliefs. For example, see Judith Goldstein, Ideas, Interests and American Trade Policy. (Ithaca: Cornell University Press, 1993). Also see Hugh Helco, "Ideas, Interests, and Institutions", in Lawrence C. Dodd and Calvin Jillson, eds., The Dynamics of American Politics: Approaches and Interpretations. (Boulder: Westview, 1993). Yet this important relationship is often placed outside the bounds of theoretical inquiry and, therefore, is often not detailed explicitly. This study hopes to correct for this shortcoming in the literature.

existed (i.e., the acid rain case).

"Politics" broadly defined may, and often does intervene to determine the level of scientific consensus required by a decision maker before he or she will formulate policy based on new information. In particular, the amount of scientific consensus demanded on an environmental issue by decision makers before a policy initiative is advocated is directly related to the degree of political opposition or support for government action. A useful way of understanding the different levels of scientific consensus, and when they become relevant to policy makers, was suggested in an interview with a senior official at the EPA. He argued that the development of science on environmental problems generally occurs in three stages. First, scientists will often discover an "association" between two events that creates a cause for public concern. In the mid-1970s for example, scientists began postulating that acidic rainwater was affecting the pH balance of lakes and killing fish. The association relates the environmental damage to the variable(s) believed to be responsible for it.

If scientific investigation into the phenomenon continues then often the "mechanism" explaining the correlation will be discovered or postulated. It took over a decade, until 1988, for scientists to confirm that chlorine from CFCs was interacting on the surface of ice crystals in Antarctic clouds and destroying ozone. In this

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167 Whether these conclusions apply to other issue areas is beyond the scope of this study.

168 Interview with NRDC official David Hawkins, January 25, 1996, Washington, D.C.
way the mechanism of Antarctic ozone layer depletion was discovered. Finally, with continued scientific investigation consensus may eventually develop on the "effects" of the phenomenon in question. Investigators will accumulate actual data to confirm that the effects of an environmental problem are real. In general then, scientific consensus of an environmental problem develops first at the level of association, then on the mechanism and finally at the level of effects.169

It is useful to conceive of scientific consensus as developing progressively along a scale because the degree of political opposition, or support, for an environmental policy initiative determines how far down the scale decision makers require scientific agreement to exist before they are willing to take action on an issue. If there is little political controversy surrounding proposed environmental regulations government officials, and society in general, will often only require that consensus exist on the postulated association. However, in the midst of intense political conflict, state actors will likely insist that wide scientific agreement exist on the association, mechanism and even the effects of an environmental problem before taking action and paying the political costs. The "Riordan Scale" thus provides researchers with a useful tool for understanding the relationship between interests and ideas in policy making involving environmental issues.

169 Interview with EPA official, Courtney Riordan, January 16, 1996, Washington, D.C.
IV. Ideas, Politics and the Reagan Administration

At first glance it may appear that there was little difference between the ozone layer and acid rain cases with respect to the development of scientific understanding and scientific consensus. Investigation into both environmental problems began in earnest in the mid-1970s and went through phases of great activity and periods of low ebbs. Each case was subject to much scientific uncertainty for at least part of its history and policy was eventually made in both instances based on the scientific information available.

Yet a closer examination of the science behind these issues suggests that the little consensus that did exist around ozone depletion was present at a very rudimentary level, or at the beginning part of the Riordan Scale. Even after the Montreal Protocol was signed there was only partial consensus on the association between CFC emissions and ozone layer depletion. The mechanism for this phenomenon was not discovered until a second Antarctic expedition was completed in 1988, long after the Reagan administration began moving towards CFC controls. The actual effects of ozone depletion are still in question to this day.170

One official who managed the massive National Acid Precipitation Assessment Program stated that, "There are like 10 000 people who

170 Alan Miller of the NRDC estimates that over the last 20 years less than $25 million has been spent on researching the effects of ozone depletion. This is in comparison to the hundreds of millions of dollars spent on gauging the effects of acid rain over the years. Interview with Alan Miller, January 26, 1996, College Park, Maryland."
know the chemistry [of ozone layer depletion] and about six that know something about the effects. Whereas, if you went to a meeting about acid rain, it is roughly balanced.\(^{171}\)

While scientists studying the CFC issue were struggling to achieve consensus on the mechanism and even the association, the science of acid rain had long since passed these stages and political controversy was pushing it into the realm of effects. In fact, an examination of discussions between administration officials and within Congress reveals that debate, as early as 1982 or 1983, focused less on whether acid rain existed and more on whether there was enough scientific consensus on the nature of its effects to justify the high costs associated with various clean up programs.\(^{172}\) Scientific debate on acid rain was therefore centred at the level of effects, a level barely reached in discussions about ozone depletion.

There was a lower level of political conflict surrounding the ozone layer issue because industry supported regulation and due to an absence of regional conflict. For this reason decision makers were willing to allow science to influence policy development even

\(^{171}\) Confidential Interview, January 23, 1996, Washington, D.C.

\(^{172}\) In 1981, the Department of Energy reported in its "Acid Rain Information Book" that in the areas of fish destruction and human health effects the extent of the information gap was "minor" and would only take "months" to close. The gap was larger on lake ecology and forest damage and therefore "years" more research were needed. However, in 1980 the Department of Energy alone spent roughly $250 000 on effects research and this rose to nearly $400 000 in 1981. "Acid Rain Information Book - Final Report", U.S. Department of Energy. (May, 1981), 21, 22.
though consensus at the time had certainly not been achieved at the level of mechanism, or at the level of effects, and had only partially been achieved at the level of association. In contrast, greater political conflict over possible SO$_2$ and NO$_x$ controls due to staunch industry opposition, regional conflict and congressional stalemate, meant that the Reagan administration$^{173}$ demanded as a prerequisite for action total consensus at the level of effects. Because agreement among scientists at this level never fully satisfied administration officials while Reagan was in power, the administration continued to call for more research and took no regulatory action.$^{174}$

$^{173}$ Reagan himself made it clear in numerous statements that he accepted that acid rain was an environmental problem. On occasion he even acknowledged that SO$_2$ emissions were to blame for this environmental problem. In his remarks to the National Campers and Hikers Association in 1984 he indicated the need for greater understanding "about the problem that is causing some of our lakes to die and some of our forests to be affected." Ronald Reagan, "Remarks to the National Campers and Hikers Associations in Bowling Green, Kentucky - July 12, 1984", Ronald Reagan: Public Papers of the Presidents of the United States. (Washington, D.C.: United States Government Printing Office, 1987), 1036.

A few months later he outlined the steps his administration was taking to address acid rain; "And so, we're going to continue as fast as we can with that research, and then we'll do whatever has to be done. We are experimenting with liming some lakes, which can restore those lakes." Ronald Reagan, "Interview With Representatives of the Scripps-Howard News Service - October 25, 1984", Ronald Reagan: Public Papers of the Presidents of the United States. (Washington, D.C.: United States Government Printing Office, 1987), 1649. Evidently, the question of whether acid rain existed (association) and was caused by SO$_2$ and NO$_x$ emissions (mechanism) was not an issue for Reagan at this time. He was beyond this stage in his understanding of the problem and was concerned with finding the appropriate technology to use to clean up this problem.

$^{174}$ Quite aware that complete consensus on all three scientific levels was very difficult, if not impossible to achieve, industry officials made it part of their strategy in fighting acid
One last insight about the nature of scientific inquiry into environmental problems helps explain why the science and politics of ozone layer depletion resulted in U.S. leadership while the administration refused to move on acid rain. In particular, the further along the Riordan Scale one moves from association to mechanism to effects, the more complex the science becomes and, as a result, the more difficult it is to achieve consensus. Investigating the effects of an environmental problem often requires moving from physical systems of study to biological systems and this requires an understanding of many more complex interactions. The greater complexity of biological systems arises because the researcher must investigate organisms that can, and do, evolve. This obstacle is not encountered when examining the static physical systems that are often relevant in the examination of associations. Once you have a rule for a physical system it will not soon change, but in biology there is an expanding number of variables that must be taken into consideration to fully understand the phenomenon under question. In the case of acid rain regulation to demand that this information be made available before action was taken. Robert Gibson, "Out of Control and Beyond Understanding: Acid Rain as a Political Dilemma" Alternatives. 11: 3-8, (Winter, 1983), 7.

Interview with David Hawkins, January 25, 1996, Washington, D.C. James Hornbeck, an American scientist, highlighted the complexity associated with the study of acid rain effects when he noted how difficult it has been for researchers to understand how, or if, acid rain damages forests. The problem is that forest ecosystems are very complicated and periodically go through periods of good health and bad health related to many different factors including pests and changing weather. Interview with James Hornbeck, January 2, 1996, Durham, New Hampshire.
pollution then, the politics of the issue created a demand for consensus not only at a higher level of science but also at a level that is exceedingly more complex and, therefore, more difficult on which to achieve wide scientific agreement.

X. Conclusion

A close investigation of the Reagan administration's response to the acid rain and ozone layer environmental problems suggests that interest groups successfully moved the administration to take a leadership role in one case and not in the other. Important differences in the policy networks that formed around these two issues determined both the capacity of state actors to direct policy independently and the related ability of social groups to shape the policy making process. One of the important effects that interest groups had on decision makers was that they influenced the receptivity of these officials to new information about the environmental problems under question. In the case of acid rain, those officials (e.g., William Ruckelshaus) who supported regulation simply could not overcome the enormous political pressure from a powerful, but specialized, anti-regulation associational system. In addition, intense industry lobbying made many administration officials opposing controls less receptive to new ideas and information that indicated acid rain was a serious problem requiring immediate regulation. In this way these interest groups were successful in pressuring the administration to remain inactive on the question of $SO_2$ and $NO_x$ controls for the duration of
Reagan's time in office.

The debate over the regulation of ozone depleting substances was significantly altered by the eventual move, on the part of the CFC industry, to announce its support for possible controls of these chemicals. The removal of this major obstacle to policymakers, along with increased political pressure from a powerful environmental community and a congruence of values between administration and corporate officials, provided a window of opportunity for those decision makers (primarily in the EPA and State Department) that were already convinced of the need for the United States to take aggressive action on this issue. The more favourable "politics" behind the CFC case also permitted some administration officials, including the president himself, to become more open to new information about the possible effects of ozone depletion and the need for action on this issue. In this manner, interest groups played a central role in shaping how the Reagan administration approached these two environmental problems.

Clearly, an interest group explanation is central to an understanding of how these two environmental cases developed over the 1980s. However, a societal politics approach has difficulty showing why U.S. officials went beyond the recommendations made by industry and even the requirements of the NRDC lawsuit.

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The Alliance for Responsible CFC Policy announced its support of U.S. participation in international talks to regulate CFCs on September 16, 1986. A few weeks later DuPont came onside and also gave its support for these negotiations. Cagin and Dray, 305. This support for international negotiations was far short of the 95 percent reduction proposal that the U.S. administration brought to the Montreal Protocol negotiations. Indeed, shortly
settlement, and called for a 95 percent reduction in CFCs during international negotiations. The following chapter will therefore supplement the interest group explanation by examining how new knowledge and information affected the acid rain and CFC policy making processes by shifting the values of important decision makers.

after backing international negotiations, the CFC industry began arguing that the administration was moving too fast on this front by calling for such deep reductions in the production of CFCs. Cagin and Dray, 311.
Chapter Five - The Sky is Falling: Value Shift and the Reagan Administration

The recognition that scientific knowledge and ideas played an important, albeit indirect, role in these two cases of environmental policy making is a product of the epistemic community theory discussion in Chapter Three. This theoretical approach was unable to explain why the Reagan administration led the way in efforts to protect the ozone layer but not on the acid rain issue. However, since the positions adopted by the various interest groups and government officials were nearly always justified in terms of the latest scientific information and because knowledge about ozone depletion found its way into the final set of regulations adopted in Montreal, it is clear that ideas had an important impact on how these two cases evolved. Therefore, investigation of epistemic communities contributed to this study by inviting the researcher to broaden the discussion of ideas and information and investigate the way they may have interacted with other factors to affect administrative decision making. Scientific information affected the policy making capacity of the Reagan administration by empowering societal groups or decision makers and by shifting the values of important individuals in the two policy networks.

The focus on interest groups in Chapter Four revealed how domestic forces provided little motivation for policy makers within the Reagan administration to regulate SO₂ emissions. Environmental groups were not successful in pushing the United States to act on this issue and industry groups ensured that the few initiatives that were taken did not grow into a major reductions program. In
contrast, pluralist forces in the ozone layer case increased the capacity of the state to take action to limit CFC production and consumption. Interest group analysis also shed light on why administration officials differed in their receptivity to the new information and ideas about these environmental problems. Where political conflict was heightened by intense lobbying efforts by the industries producing SO₂ emissions, policy makers demanded complete understanding of all aspects of acid rain processes before taking regulatory action. Eventual agreement by both the CFC industry and environmental groups on the need for the regulation of ozone depleting substances entailed less political conflict on this issue. Accordingly, Cabinet level officials were more receptive to new ideas about how to respond to this ecological problem.¹

The role of societal groups in shaping the Reagan administration's response to acid rain pollution and CFC emissions was certainly important, and possibly decisive. Without the support of DuPont in the mid-1980s, political forces opposing CFC controls in the executive and in Congress may have gained the upper hand and ensured that the United States continued to take a reactive, rather than proactive, approach to this issue. However, as noted in Chapter Four, a full account of the evolution of U.S. policy in these two cases requires that one join an interest group explanation with an approach that moves beyond a conception of the

¹ As one EPA official stated, "If you have...the emerging pieces of a consensus politically then you are not going to need as much of a consensus scientifically. And that is what you had in the Montreal Protocol." Interview with Courtney Riordan, January 16, 1996, Washington, D.C.
decision making process as simply rational calculation involving the sum of interest group forces for and against action. An investigation of other factors that influenced the preference formation of key decision makers therefore complements the discussion of interest groups. This chapter focuses on the role played by values in motivating Reagan administration officials to push for CFC controls, but resist efforts to create an acid rain treaty. A general outline of the argument made in this chapter is offered next.

I. Main Argument

Upon coming to power in the early 1980s, the values and beliefs that informed the position the Reagan administration adopted on acid rain, and on the possible destruction of the ozone layer by CFCs, were quite similar. Top officials in the administration during this time, especially those in the EPA, the Office of Management and Budget (OMB) and the Department of Interior, approached both issues with a desire to limit government regulation in an attempt to increase economic freedom and thereby strengthen economic growth. Less value was accorded to the protection of human health and to protection of the ecosystem, either as an end in itself, or as a means to sustain the well-being of the American people. The impact of environmental policies on future generations was also of less concern to these government officials than was the performance of the economy.

The CFC industry and the emitters of acid rain causing
chemicals differed from environmental groups at this time by placing much greater emphasis on the continuance of their own economic growth than on protection of the environment. Key officials in these two industry groups vehemently opposed the regulation of CFCs and SO₂ respectively because of the perceived consequences such regulation would have on the economic interests of the companies involved. The effect of industrial effluent on the environment was argued to be either inconsequential or so poorly understood that regulatory action was deemed premature and unnecessary. As well, the effects of existing corporate policies on people living in the distant future were disregarded, as was recognition of the natural environment's fragility and susceptibility to harm from human activity.

However, around 1985-1986 the value orientations of key officials in the Reagan administration, and in the CFC industry, began to shift so that regulation of ozone depleting chemicals became possible and, indeed, an important policy goal. While the environmental values of these decision makers were gradually being evoked by their changing worldviews, the critical event that really generated this shift was the discovery of the ozone hole over the Antarctic in May of 1985. For mid-level officials in the EPA who were already concerned about the CFC threat and taking action to address it, the new revelations about the thinning ozone layer increased the intensity of the values driving them to action so that they became more motivated to resolve this issue.

The ozone hole had an even more dramatic effect on officials
inside the Reagan administration and within industry who had previously been guided by a different set of values and had thus resisted the regulation of CFCs for so long. Many of these people, including Reagan himself, were dramatically affected by the serious health threat the ozone hole seemed to pose (especially in the form of skin cancer) and by the widespread perception that this was a long-term, irreversible phenomenon. As such, many of these key officials began to value human health and preservation of at least this part of the natural ecosystem as much as the continued growth and prosperity of the CFC industry and the nation's economy.

The important absence of some type of critical event in the acid rain case that might have elicited environmental values in key decision makers meant that government officials in Washington, and the corporate elite in the SO₂ emitting industries, were not induced to take a leadership role and support the regulation of acid rain causing chemicals. The fact that acid rain was never viewed as a serious health threat, but rather as a reversible occurrence, only heightened the resolve of SO₂ producers to resist controls of these chemicals. Moreover, without the urgency of an environmentally related health crisis driving them to action, officials in the Reagan administration became much more receptive to interest group lobbying by electric utilities and coal producers who opposed U.S. leadership on acid rain controls.
II. International Relations and the Study of Values

Historically, the field of International Relations has had little to say about the place of moral concerns and values in the study of relations among the world's states. Martin Wight's comment in the late 1970s that this discipline was marked "not only by paucity but also by intellectual and moral poverty" is, in many respects, as relevant today as it was back then. Consequently, there has been little substantive analysis in this field on the question of how individual values affect foreign policy making.

There are three main reasons for this serious omission in the International Relations theory literature. First, the dominance of realism in this field since the Second World War has had the effect of undermining the legitimacy of any form of international moral theory. The focus of the International Relations scholar has therefore largely remained the study of power relations among states defined as "rational actors". Second, the development of systems level theory in this discipline, particularly neorealism, has precluded altogether any consideration of individual level

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3 Beitz, 407. International moral scepticism, a product of realism, has effectively undercut the legitimacy of the other two principal conceptions of international morality, the morality of states and a cosmopolitan morality. In very general terms these two notions of morality hold that, because moral judgements about international relations are meaningful, states do have obligations to obey specific moral rules that may require sacrifices of self-interest. Beitz, 408.
processes as important determinants of interstate behaviour. Most importantly, the move to make the examination of interstate relations a more scientific enterprise, in accordance with the positivist tradition, has put into question the utility and validity of inquiring about a decision maker's value orientation.

In the quest for parsimonious and rigorous scientific theories, students in this field have viewed ethical questions as too individualistic and utopian. They have recognized, as the poet Alexander Pope did over two centuries ago that, "The science of human nature is like all other sciences, reduced to a few clear points: there are not many certain truths in this world." These students have therefore adopted many "anti-naturalist assumptions"


5 Halliday, 21.


The German philosopher Immanuel Kant also recognized the difficulties associated with studying human behaviour in a scientific manner. Because humans are goal-directed beings, and goal-directedness transcends the physical laws of nature, Kant argued that a scientific biology would be unachievable. Pouwel Slurink, "Paradox and Tragedy in Human Morality", *International Political Science Review*. Vol. 15, No. 4, (1994), 353.

Even the leading psychologist of the behaviourist school, B.F. Skinner recognized the limitations faced by science when seeking to explain human behaviour. He argued, "...we cannot predict or control human behaviour in daily life with the same precision obtained in the laboratory, but we can nevertheless use results from the laboratory to interpret behaviour elsewhere." Mark Sagoff, "Fact and Value in Ecological Science", *Environmental Ethics*. Vol. 7, (Summer, 1985), 114.
about human conduct. As a result, political theorists have built their complex models of behaviour upon a few very basic assumptions including the view that people generally act to maximize their utility and behave as rational actors during this process.

Yet, these assumptions are increasingly coming under question as observers of interstate behaviour attempt to more fully understand the complexities involved in the preference formation process. Janis and Mann refute the assertion that people are simply rational utility maximizers and instead argue that motivations arising from the emotions and from value judgements often intervene in the choice process. Similarly, in proposing the need to study more closely how the justice motive influences decision makers, David Welch proclaims that "International Relations theory needs to rediscover the human soul." Ultimately, values and norms are not irrelevant or independent of the decision making process, but are rather an integral part of

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9 Political analysis in the International Relations field has historically been influenced by the assumptions adopted by realists. One of the central assumptions in this discipline is that all leaders seek military and economic power in an effort to ensure the survival of their states. The classic formulation of realist doctrine is Hans J. Morgenthau, Politics Among Nations: The Struggle for Power and Peace. (New York: Knopf, 1973).


it. Failure to recognize this fact will ensure that International Relations theory, while scientifically rigorous, maintains little relation to actual events in the real world.

III. Values and Worldview Defined

When studying values, scholars have used this term to refer to many different types of phenomena including preferences, likes, interests, desires, duties, goals and wants. In order to maintain conceptual clarity in this study the term values will refer to "shared prescriptive or proscriptive beliefs about modes of behaviour and end-states of existence that are activated by, yet transcend object and situation." Values have the effect of

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12 Values are important and can be investigated in a meaningful and systematic way. In support of this assertion Robin Williams states, "observation of processes of evaluation makes it quite clear that some values are indeed highly explicit, and appear to the social actor as phenomenal entities: the person can state the value, illustrate its application in making judgements, identify its boundaries and the like." Robin M. Williams Jr., "Change and Stability in Values and Value Systems: A Sociological Perspective", in Milton Rokeach, Understanding Human Values: Individual and Societal. (New York: The Free Press, 1979), 17.

This examination of elite decision making in the United States during the Reagan administration's tenure incorporates measures of value systems and their influence on behaviour drawn from analysis of the public speeches of decision makers and the private statements of officials found in government documents, memoirs and biographies. Critical analysis of important events by historians and post hoc accounts found in journals were also utilized.

Where possible, public and private officials responsible for the course the United States set on the acid rain and ozone layer cases were interviewed. By supplementing the content analysis of the relevant source materials with the information gained through open-ended interviews and, by eliminating alternative explanations, I was able to suggest the plausibility of my account of how these two issues evolved in the United States.

13 Milton Rokeach as cited in Gerald W. Hopple, "Elites, Values and Foreign Affairs: Illuminating the Nexus", in Gerald
organizing a person's beliefs, attitudes, perceptions and behaviour. Worldview refers to the generalized system of beliefs a person uses to understand human-environment relations. Rather than detailing desired end-states of existence, a person's worldview simply reveals the "facts of the matter."

A significant amount of research has recently been devoted to examining whether the basic value priorities and worldviews of people in North America and Europe are changing. The suggestion that we are entering an era of postmaterialist values or are moving toward a new worldview based on a New Environmental Paradigm (NEP) has sparked the imagination of many social scientists.

Edward Andrew in his book The Genealogy of Values: The Aesthetic Economy of Nietzsche and Proust makes an interesting distinction between values and principles. In particular, he suggests that values are inherently subjective while principles are more objective. As such, there is no such thing as "universal values". Rather, values should be confined to the sphere of moral and aesthetic choices. Edward Andrew, The Genealogy of Values: The Aesthetic Economy of Nietzsche and Proust. (Lanham: Rowman & Littlefield Publishers, 1995).

This study adopts a similar conceptualization of values in that values are posited to exist along a hierarchy and are often evoked as the individual responds to some type of external stimuli. The effect of a "critical event" on a person's value system is described later in this chapter.


Consequently, there is scholarly work being done to investigate the influence that specific value or worldview orientations have on the behaviour of individuals.\textsuperscript{18} It is upon this matrix of the relationships among values, worldviews, beliefs, critical events and individual behaviour that I highlight the relevant processes that demonstrate how the value orientations of important decision makers in these two cases account for U.S. leadership on CFC regulation but not in the acid rain case.\textsuperscript{19}

\textsuperscript{18} For example, a survey of residents in Orange County, California in 1990 revealed a link between peoples' perceptions of environmental threats and their participation in behaviours and practises related to the environment such as recycling, the conservation of water, the purchase of environmentally safe products and limiting driving. Mark Baldassare and Cheryl Katz, "The Personal Threat of Environmental Problems as Predictor of Environmental Practices", Environment and Behaviour. Vol. 24, No. 5, (September, 1992), 602.

\textsuperscript{19} This study employs the concept of value shift to explain Reagan's environmental policy rather than individual learning for a number of reasons. Most importantly, learning is primarily concerned with the way in which new information changes the cognitive make-up of individuals to influence their behaviour. As such, learning cannot account for the emotive impact that critical events have on decision makers by evoking particular values in them. There are also a number of definitional and methodological problems associated with the concept of learning. For example, it is often not clear who must learn in order for a change in behaviour to come about. Jeff Checkel, "Ideas, Institutions and the Gorbachev Foreign Policy Revolution", World Politics. Vol. 45, No. 3, (April, 1993), 294. There is also an uneasy balance in this literature between the need to avoid equating learning with policy change and the need to establish some evaluative criteria for learning such as institution building. Heather Smith, "A Critical Assessment of the Epistemic Community Approach", University of Northern British Columbia, no date. For all of these reasons this examination of Reagan's approach to acid rain and ozone layer depletion focused on the way in which values where shifted in key decision makers.
IV. Values and Decision Making

a. General Processes

Some important insights have been made in the environmental ethics and environmental behaviour literatures concerning how the values, beliefs and worldviews of actors influence their behaviour. As a result, a few key features from the literature describing the way normative processes and values work to motivate decision makers inform much of the analysis in this chapter. To begin, values and worldview often act as filters for new

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By investigating the role values played in these two cases an ontological shift has been made between the previous two chapters that provided epistemic community and interest group explanations respectively and this chapter. Recognition of this ontological shift is important because it concerns the fundamental assumptions underlying individual preference formation - assumptions that are key to explaining decision making behaviour. Both the interest group and epistemic community theory literatures posit a decision maker that is a rational actor concerned only with maximizing utility and, therefore, behaving accordingly. The rational actor model contends that when making decisions people chose means according to logical-empirical considerations. Of central importance to the individual in the decision making process is the rational calculation of which means is the most efficient and will maximize utility. Amitai Etzioni, The Moral Dimension: Toward a New Economics. (New York: The Free Press, 1988), 1.

In contrast, this chapter refuses to conceptualize preference formation in such a limited way, but rather expands the horizon of thought processes, primarily normative and affective, that influence individual behaviour. While the rational actor model may be a useful theoretical tool in certain contexts, it is woefully inadequate in accounting for the larger part of human experience. For, as Fekete argues, "we live, breath, and excrete values.

information. As Etzioni argues, "normative values lead to selective exposure to information...they influence the weight given to information in ways that bias judgement toward strengthening pre-existing beliefs." Values have a direct influence on perception. They will often provide normative coloration to the information an individual receives. Indeed, our appraisal of the "facts" of a situation may be so affected by our worldview that our ability to differentiate between myth and reality becomes compromised. That is, "what we have accepted as real or fact may merely be the dominant myth that we have decided to live by and we have no non-mythological access to facts, there are no facts that come to us unfettered by our worldviews."

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21 Stern, Dietz, and Guagnano, 726.
22 Etzioni, 106.
23 Gwyn Prins, in his discussion of the impact of early European voyages on the development of geographical and natural scientific frameworks, provides an excellent illustration of the influence that worldview can have on individual beliefs and perceptions. Prins recounts a story describing the arrival of the Endeavour in Botany Bay in 1770. As this ship entered the bay under the command of Lieutenant Cook the aboriginals did not even look up to see what was occurring. The Endeavour was "so far beyond their ken" that these people simply did not see it and, in fact, only prepared to defend their lands when small boats were lowered from the large ocean going ship. Gwyn Prins, "Politics and the Environment", International Affairs. 66, 4, (1990), 729. The generalized system of beliefs possessed by members of this aboriginal community evidently influenced how these people perceived the world around them.

24 Michael V. McGinnis, "Myth, Nature and the Bureaucratic Experience", Environmental Ethics. Vol. 16, (Winter, 1994), 432. During the process in which stratospheric ozone levels were monitored by NASA in the 1980s, the central beliefs held by officials in this agency concerning the nature of atmospheric systems caused them to ignore scientific measures indicating significant ozone depletion was occurring. In fact, NASA pre-
Second, principled beliefs, or "normative ideas that specify criteria for distinguishing right from wrong"\textsuperscript{25} are beliefs or ideas through which underlying values have an impact in motivating behaviour. Even when the causal ideas that inform actors how to achieve their objectives are plagued by uncertainty, as they often were in the acid rain and ozone layer cases, principled beliefs may still motivate decision makers to take action by reinforcing value commitments.\textsuperscript{26} Due to the important role played by principled beliefs in these cases, any explanation of the Reagan administration's response to these two environmental problems rooted exclusively in the role of scientific consensus and causal ideas is inadequate.\textsuperscript{27}

Because principled beliefs are shaped by underlying value commitments, a full understanding of how values direct individual behaviour must grapple with how values are transformed over time. It is argued here that value change, whereby a person actually acquires a new value system, will often take many years or even


\textsuperscript{26} Goldstein and Keohane, 16.

\textsuperscript{27} This explains why it is necessary to go beyond an epistemic community theory analysis of the Reagan administration's response to these two environmental problems.
decades. In addition, because the transformation of a worldview entails the redefinition of an entire system of generalized beliefs, this process also often takes many years. In view of such long time scales it would be unwise to preface short-term public policy shifts on the concept of value or worldview change.

Rather, it seems more appropriate to envisage this process in terms of value "activation". It is reasonable to assume that, since values are beliefs about preferred modes of behaviour and end-states of existence, most human beings are repositories of a wide range of different value orientations. As Milton Rokeach suggests, "differences among individuals may be not so much in the presence or absence of particular values as in the arrangement of values, their hierarchies or priorities."  

Value systems differ along a number of dimensions. Of greatest import to this study are hierarchical ordering, a measure of the importance and strength of specific values in the value

28 Stern, Dietz and Guagnano, 726. Goldstein and Keohane (10) note that changes in causal ideas occur more frequently and more quickly than do changes in worldviews or principled beliefs. Also see David Gutierrez Karp, "Values and Their Effect on Pro-Environmental Behaviour", Environment and Behaviour. Vol. 28, No. 1, (January, 1996), 112.

29 Rokeach as cited in Williams, 17. During the late 1970s and early 1980s Milton Rokeach conducted experiments purporting to show that a 40 minute session of information exchange could change the values of an individual. Keith R. Sanders and L. Erwin Atwood, "Value Change Initiated by the Mass Media", in Milton Rokeach, Understanding Human Values: Individual and Societal. (New York: The Free Press, 1979), 227. However, it is the contention of this author that Rokeach was actually measuring a shift in the subject's hierarchy of values and not an actual change of values. Values were not being created and destroyed but rather "activated" in the individual and this activation is certainly responsive to short-term situational contexts.
system, and extensiveness of adherence, a practical measure of the effect of values on behaviour. The experience of being human is mediated by the constant push and pull determining what set of values will direct behaviour. As such, it is clear that humans have the capacity to be motivated by a wide range of value orientations, but often act in specific ways when particular values or moral principles become dominant or "activated". The key in this comparative case study is to examine how, and why, specific values were activated in the important decision makers to motivate them to take a leadership role in the ozone layer negotiations.

The process by which values are activated and then go on to influence behaviour is illustrated by the Schematic Causal Model of Environmental Value Orientation presented as Figure B.31

30 Williams, 18.

31 The schematic model developed here is based on the "Schematic Causal Model of Environmental Concern" offered by Stern, Dietz and Guagnano, 727.
This diagram highlights the different factors that mediate the process through which value orientation affects behaviour. In doing so, this schematic diagram highlights the complexity of this process. For example, the important factors influencing how values shape behaviour form a rough circle, illustrating the various feedback mechanisms at work, and also the fact that this is not a simple linear process.

\[32\] I have not indicated on this diagram that principled beliefs influence causal beliefs because it is most often the values that the principled beliefs reflect that influence causal beliefs.

A dashed line indicates a weak relationship while a solid line indicates a strong relationship.
unidirectional process.\textsuperscript{33}

Values have their greatest impact on behaviour through the principled beliefs that an individual holds to be true.\textsuperscript{34} Value change therefore results from the realization of incongruities and contradictions between one's values due to a change in personal beliefs.\textsuperscript{35} Although values and worldview often work through the belief system to shape an individual's behaviour, it does not follow that a simple change of causal beliefs will necessarily precipitate a concomitant activation of specific values. New beliefs may transform a person's worldview over time. But because values act as filters for new information, these new beliefs may be rationalized and accommodated by the existing value orientation. They therefore, do not constitute a sufficient condition for a shift in value orientation.\textsuperscript{36}

\textsuperscript{33} Williams (16) highlights just one of the feedback mechanisms operative in this system when he notes, "in the long run the changed beliefs profoundly affect evaluative standards [values] even as, in turn, changes in values will affect our conceptions of reality."

\textsuperscript{34} Goldstein and Keohane, 16.

\textsuperscript{35} Williams, 33.

\textsuperscript{36} This particular characteristic of the relationship between value orientation and worldview arises from the important differences existing between these two concepts. Specifically, values are likely formed earlier in life and therefore tend to be more general and much more stable over time. They cannot be challenged with respect to measures of truthfulness but only with regard to their desirability. They are therefore more resistant to change. Worldviews however, rooted as they are in causal beliefs, are more susceptible to empirical challenge. Moreover, having been shaped by political and social experiences, a worldview is less stable over the course of a person's life. Stern, Dietz and Guagnano, 727.
b. Critical Event

If a change in beliefs or, if general enough, worldview, is not a sufficient condition to significantly affect value orientation, then what else is required to achieve this outcome? The key, it seems, lies in the emotive nature of value systems. As J. Kagan argues, "...the rationalist and emotional processes work together to produce moral discourse...morality draws its force from sentiment, not logic..."\(^{37}\) In contrast to worldview, moral principles are rooted in the sentiments, in the desires and fears that people have and in the conscience which brings guilt to bear on all sorts of moral digressions. In this realm rational thought guided by causal beliefs is of secondary importance. For this reason it is often a dramatic event or experience that is able to break through and touch the sentiments that can create a discernible activation of a particular set of values in a person.

The Schematic Causal Model of Environmental Value Orientation illustrates the effect a critical event can ultimately have on values and, indeed, on worldview and causal beliefs.

There is a growing body of evidence illustrating the importance of "critical events" in reshaping the values that people have on specific issues. Philip Pollock describes the underlying process operative here in the following manner, "'critical moments'\(^{37}\)

are of key importance in supplying people with symbolic frames for issues and, thus, in defining or redefining the value basis of issue conflict."³⁸ As people are made aware of their own internal value contradictions through an emotional response to a critical event, a felt experience of self-dissatisfaction leads to value activation.³⁹ Often, the contextual information supplied by elites during a critical moment gives "value colorations" to messages which may also evoke specific moral principles in the observer. Pollack argues that critical moments produce "a durable shift in the types of values people use when deciding where they stand on policies..."⁴⁰

Evidence of the influence that critical events can and do have on the policy making process abounds in the literature. Karen Litfin supports her assertion that disasters often precipitate the creation of new regimes by citing the massive forest death in West Germany in the early 1980s which led to a much more rigorous acid rain policy in that country.⁴¹ Similarly, Derek Hall suggests that much of the recent interest and concern with the environment is a


³⁹ Williams, 33.

⁴⁰ Pollack, 430. Critical events, it seems, may also shape a person's worldview. For a discussion of the effect of "critical environment experiences" on worldview based on an empirical case study, see Arcury and Christiansen, 402.

result of the ecological disasters associated with the growth economy.\textsuperscript{42} Ultimately then, a change in belief system or worldview, when combined with a critical event that creates emotive responses, will often activate particular moral principles in an individual. Evidence provided in the latter part of this chapter suggests that important decision makers, both inside and outside of the Reagan administration, perceived the discovery of the ozone hole as a critical moment and this shifted the values they used to respond to this issue.

Before examining the speeches, interviews, documents and memoirs of important decision makers in these cases to see if an explanation involving the role of values is plausible, it is first necessary to outline the range of value orientations and worldviews that are linked to specific modes of environmental behaviour.

c. Types of Worldview

Much scholarly effort has gone into investigating the nature of the worldviews held by people in society to determine whether environmental attitudes and beliefs have changed in recent times. For the purposes of this investigation it will be sufficient to highlight the two most frequently used paradigms of human-environment relations, the Human Exemptionalist Paradigm (HEP)\textsuperscript{43}

\textsuperscript{42} Derek Hall, "Gramsci, Ecology, and the Emerging World Order", \textit{International Insights.} (Spring, 1993), 32.

\textsuperscript{43} Arcury and Christiansen, 389. Also see Henry Shue, 1995. The HEP is given a variety of names in the literature. It is often referred to as the anthropocentric worldview. In this study I hold that the term anthropocentrism denotes a specific
and the New Environmental Paradigm (NEP). The HEP has its origins in the biblical tradition which stresses that God has given man dominion over nature to use as he wishes. As long as a wider ethical framework, in the form of Western religion, prescribed specific goals for man, the negative effects of human beings on the ecological system were held to a minimum. However, with the declining importance of organized religion in regulating human affairs the full force of the HEP began to be felt. The Human Exemptionalist Paradigm is premised on the belief that humans occupy a pre-eminent place in the hierarchy that defines the place of organisms in the ecological system. Indeed, people are thought to exist outside the world of nature and are not believed to be bound by the laws that govern it. In addition, the only interests that are taken seriously and protected are those of human beings.

To further their interests people have ardently controlled, managed and manipulated the natural environment.

Underlying the HEP according to Dunlap and Van Liere is "our belief in abundance and progress, our devotion to growth and prosperity, our faith in science and technology and our commitment system of values rather than a set of generalized beliefs. To the degree that a particular system of values underlies the beliefs a person holds, these two concepts are closely related. However, for reasons of conceptual clarity it is important to note the differences between the HEP and anthropocentrism.

44 Stern, Dietz, Guagnano, 725.


46 Shue, 457.
to a laissez-faire economy, limited governmental planning and private property rights." It is this generalized system of beliefs that underlies the specific patterns of behaviour (i.e., pollution, consumerism, energy consumption, waste production) responsible for the ecological problems that currently threaten the future of the earth.

Yet there is some evidence that, among people in the industrialized world, the HEP is beginning to wane and is being challenged by the NEP. In its most widely accepted form the NEP expounds the belief that there are real limits to economic growth. Moreover, this paradigm emphasizes the importance of achieving a balance between the production and consumption of goods and environmental protection. There is a newly perceived need for the human population to live in harmony with nature. This follows from a growing recognition that because human beings are part of the natural world, they are governed by its rules and face the consequences of disrupting these rules. Consequently, beginning in the 1980s, there was an increasing acceptance in the industrialized world of the idea of a "steady-state economy"

47 Dunlap and Van Liere as cited in David Scott and Fern K. Willits, 239.


49 Stern, Dietz, and Guagnano, 725. See also, Arcury and Christiansen, 390.

50 Scott and Willits, 240.

51 Arcury and Christiansen, 390.
"sustainable growth" in order to limit the negative impact of the human population on the earth's environment.\textsuperscript{52}

A decision maker's worldview is important because it may act to reinforce the value orientation that directs behaviour. Additionally, a person's worldview often provides clues about the nature of his or her particular value orientation. While care must be taken to maintain the distinction between worldview and value orientation, the close relationship between the two provides the researcher with an important tool when examining how values shape decision making.

d. Types of Value Orientation

Underlying the worldviews that people have are sets of internalized values. Social scientists in the field of environmental ethics have begun to examine the various value commitments that people hold in relation to the physical environment. At one end of the spectrum lies a value system whereby human beings are considered to be of greatest importance while the earth and its natural resources are thought to derive value only from their utility or usefulness in contributing to the satisfaction of human desires and needs.\textsuperscript{53} According to the "frontier ethic" the imperatives of economic growth and material comfort completely overshadow any consideration of environmental

\textsuperscript{52} John M. Gowdy, "Progress and Environmental Sustainability", \textit{Environmental Ethics}. Vol. 16, (Spring, 1994), 45.

\textsuperscript{53} Scott and Willits, 239.
Because the earth is believed to possess limitless natural resources, there is little value attached to the maintenance of a healthy environment. Extreme laissez-faire economics typifies this ethical framework which underlies the Human Exemptionalist Paradigm and its anthropocentric assumptions about human-environment relations. Specific values associated with the frontier ethic include productivity, freedom, individualism, efficiency, economic growth, science, material comfort, progress, and technology.

If the frontier ethic and its utilitarian assumptions have been responsible for the ecological problems we are now facing it has also greatly influenced the ethical frameworks that have evolved to address these problems. In particular, "shallow ecology" clings to basic utilitarian assumptions in its assertion that the primary reason for valuing the environment is to ensure the continued existence of people on earth. This value orientation is rooted in the concern for human health and survival achieved through a proper relationship with the natural environment. Shallow ecology suggests that we should "be nice to nature so that nature will be nice for us."\(^{55}\) Gaining acceptance in the 1960s, the new focus on environmental protection resulted in legal regulations involving short-term economic trade-offs to protect the


\(^{55}\) Janna Thompson, "A Refutation of Environmental Ethics", *Environmental Ethics.* Vol. 12, (Summer, 1990), 147.
health of the human population. However, according to shallow ecology, the environment has no inherent worth but, rather, is valued for its ability to contribute to human well-being and survival. The values particular to the shallow ecology orientation include human health, preservation, conservation, globalism, future generations, science, ecology, equality, and technology.\(^{56}\)

Occupying the other end of the value system scale, and opposite to the frontier ethic, is deep ecology.\(^{57}\) Deep ecology constitutes a radical break from utilitarian ethics by positing that everything in the world is intimately interrelated and therefore the prevailing humanity-nature dichotomy is an artificial construct.\(^{58}\) Instead of placing primary emphasis on human

\(^{56}\) The reader will notice that both the frontier ethic and shallow ecology hold science and technology to be core values. There is no contradiction here, for the ends to which each value system puts science and technology in the service of are quite different. Shallow ecology depends on technological innovation to ensure that human health is always protected while the frontier ethic relies on science and technology to maximize the utilization of natural resources for economic growth.

\(^{57}\) Other ethical frameworks exist at this end of the scale including "ecofeminism" and "social ecology". However, deep ecology seems to be the leading approach of this group and is more relevant to this comparative case study. For a wide ranging collection of important articles in the environmental ethics field see Michael Zimmerman, J. Baird Callicott, George Sessions, Karen J. Warren, and John Clark, eds., Environmental Philosophy: From Animal Rights to Radical Ecology. (Englewood Cliffs: Prentice-Hall, 1993). Also see Susan J. Armstrong and Richard G. Botzler, eds., Environmental Ethics: Divergence and Convergence. (New York: McGraw-Hill, 1993).


Stern adopts a similar classification of ethical frameworks when he suggests that environmentally responsible behaviour is a
existence, deep ecologists hold that all life possesses equal intrinsic value because the earth itself is a living being. What is needed at the present time to cure the ills that plague the environment is a total rejection of anthropocentric thinking and the adoption of an ethical framework that "recognizes a spiritual reciprocity between humans, animals and the land." In so doing human well-being would be joined by other concerns or values including the principles of complexity, autonomy, symbiosis, egalitarianism, and decentralization among others.

In detailing the major ethical frameworks related to environmental policy making, an attempt has been made to provide a map of value systems upon which important decision makers in this result of three value orientations: the egoistic, the humanistic/altruistic and the concern with the biosphere of non-human life on the planet. See Robert N. Rapoport, "Environmental Values and the Search for a Global Ethics", Journal of Environmental Psychology. 13, (1993). I have simply used different names for the three types of ethical frameworks to increase conceptual clarity.


60 Bill Devall as quoted by Hallman, 108.

61 Hallman, 108. Admittedly, the conceptual distinctions between the frontier ethic, shallow ecology and deep ecology are sometimes unclear. This reflects the fact that people are the repositories of many types of values and are rarely motivated by only one particular cluster of values. Rather, as different types of values are activated, individuals tend to move along the value spectrum in either direction.

In addition, specific worldviews and values are often so closely related that they may become difficult to differentiate in practice. It is not uncommon for researchers in this field to confound values with beliefs or attitudes when discussing a particular case. Care will be taken in this study to maintain the important distinctions between worldview and values.
study can be located and compared. Examination of a variety of research materials reveals that, in fact, there was a difference in the value orientations of the actors in these two cases. This analysis also demonstrates that important actors in the CFC negotiations underwent value shifts and responded in behavioral terms to the activation of shallow values, rather than those associated with the frontier ethic.

e. Link to Behaviour

Before introducing the key decision makers in these cases and investigating their value orientations, it is first necessary to investigate the proposition that, in fact, values do have a substantive impact on individual behaviour. For, as noted at the onset of this chapter, many observers of policy making, including economists, political scientists and sociologists, hold that value orientation is irrelevant to the decision making process. Values are thought to be of less import than rational calculation and utility maximization when actors make choices. Economists do incorporate the concept of values into their models but only in a limited way. Values are discussed in terms of short term preferences while deeper values are often left out of the decision making equation.

The notion that utility maximization and rational calculation dominate the decision making process has come under attack in the social sciences as new evidence is presented that puts these rather simplistic assumptions about human preference formation into
question. There is increasing acceptance among many scholars in these fields that, "actual selections of behaviour result from concrete motivations in specific situations; both motivations and the definitions of the situation are partly determined by the prior beliefs and values of the actor."62

Values have their most direct effect on behaviour through the operation of the conscience. In particular, the conscience, being a set of internalized values, guides "moral behaviour" in the individual. This is accomplished by inducing feelings of tension, anxiety, depression, loss of self-esteem or guilt when one or more of these internalized values are violated.63 Quite often people will act to avoid incurring the negative effects of the conscience. Moreover, if new information or some particular event precipitates the violation of these internalized values, a person will likely modify their behaviour to avoid the discomfort associated with the aroused conscience.

Empirical research supports the assertion that there is a link between value orientation and a person's actions. For example, studies of college graduates in the United States suggest that they make occupational choices consistent with their values.64 In the

62 Williams, 20.

63 D.K. Jardine, "Some Reflections on Ecological Ethics", Ethics in Science and Medicine. Vol. 7, (1980), 121. Etzioni states that, "When people violate their moral commitments to enhance their pleasures, or forgo pleasures to live up to their moral commitments, such feelings [guilt or shame or affirmation] are expected to precede, accompany, or follow their actions and these feelings in turn have behavioral consequences." Etzioni, 71.

64 Williams, 23.
ecology issue area, research findings indicate that environmental attitudes and values play a significant role in shaping pro-environmental behaviours such as yard burning, energy use, support for environmental protection and recycling. As well, Sonja Boehmer-Christiansen argues that it is environmental threats and not the scientific evidence they are based on that ultimately motivate decision making behaviour. These threats are intimately linked with the values or goals that a community (or person) holds dear. As she states, "if a political system believes the promotion of wealth creation is its primary function it will select knowledge and environmental threats accordingly." Clearly, a full understanding of preference formation and individual behaviour must delve into the issue of value orientation.

V. Individual or Institutional Values?

So far the discussion of values has been concerned primarily with the normative beliefs and values of individuals. Yet there may be other more general values that shape decision making. The ability of institutions to influence the preference formation of individuals is suggested by the following passage, "...policy formulation must always be at least in part subjective, in that it


will reflect the values, ideologies and standards of those involved in decision making and of the institutional framework within which they must operate. Institutions often inculcate and transmit specific values independent of the particularistic value orientations of the individuals associated with them. It is therefore possible that institutional values will factor significantly into the decision making process.

Yet there are good reasons to question the plausibility of an institutional value explanation for why the Reagan administration took action on the ozone issue but not on acid rain. First, there is very little evidence that, in either of these two cases involving atmospheric processes, the institutional values associated with U.S. environmental policy making changed or differed significantly. For example, in spite of attempts by the Reagan administration to weaken the Clean Air Act, this legislation remained unchanged and still in effect until President Bush had it revised upon coming to power. More generally, much of the environmental legislation in the United States was finally reauthorized in 1986 by the 99th Congress. At this time the legislative logjam broke and several environmental laws were renewed including the Clean Water Act, the Toxic Substances Control Act, the Safe Drinking Water Act, and the Superfund Amendments and Reauthorization Act. Therefore, as an important source of

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institutional values, the environmental legislation associated with air pollution and atmospheric processes remained fairly constant for the duration of the Reagan administration's time in office.

In addition, because decision making in both of these cases occurred in virtually the same institutional settings (i.e., EPA, OMB, Department of Interior, and Cabinet), and since the environmental problems being addressed were so similar (i.e., atmospheric pollution), it is unlikely that any change in the normative beliefs that did occur in these institutions would have affected the two sets of negotiations in significantly different ways. The discussion in this chapter of how values influenced policy making in these two cases will therefore, of necessity, be restricted to the individual decision makers involved.

69 There were only minor differences between these two environmental cases in this regard. The Department of Interior played a slightly greater role in the acid rain policy process than it did in the CFC issue and the Department of Energy was more active in the acid rain discussions than it was in the CFC regulation debate. Analysis of the important policy making junctures in these cases in the latter part of this chapter suggests that these differences were inconsequential to the final policy outcomes.

70 As an illustration of this point consider the case of CFC regulation. Had the Alliance been successful in shifting the norm of adversarial decision making relations in the EPA, and making the process less conflictual, this transformation would have created a newly shared understanding of negotiating behaviour in the EPA, or at least in the offices concerned with atmospheric pollution. In other words this general transformation would not, in all likelihood, be issue specific and short-term, but would rather extend over a wider range of issues until being challenged again.
VI. General Value Orientation of Reagan Administration Officials

At the start of the Reagan administration's tenure many of the key officials responsible for environmental policy were guided by values associated most closely with the frontier ethic. They therefore possessed ethical frameworks in which values such as freedom, individualism, efficiency, progress, civilization, materialism, economic growth, and technology predominated or were at the top of their value hierarchies.

The first EPA administrator under Reagan quickly became notorious among environmentalists for her persistent efforts to turn back the clock and erase two decades of environmental legislation. Anne Burford was imbued with the same western resentment of big government, taxation and overregulation that had been so prevalent among the financial supporters Reagan depended on during his attempts to capture the presidency.\(^{71}\) Referring to EPA officials under Carter, she stated, "In my opinion they are simply anti-industry and anti-business...I believe that if they could, they would happily make regulations so costly they would have the effect of cutting off all economic growth."\(^ {72}\)

At the EPA Anne Burford quickly demonstrated her behavioural adherence to the frontier ethic concerns at the top of her value

\(^{71}\) Anne Burford was convinced that environmental regulations only served to limit individual freedom and economic efficiency. She lobbied against a hazardous waste law when she was a member of the Colorado state legislature. She also opposed EPA sanctions on Colorado for not complying with national smog standards. Cagin and Dray, 240.

\(^{72}\) Cagin and Dray, 241.
hierarchy. Instrumental in slashing this agency's budget by almost 50 percent, Burford supported revisions to weaken the Clean Air Act\textsuperscript{73} and efforts to reduce to zero the $10 million-a-year U.S. contribution to the United Nations Environment Program.\textsuperscript{74} According to one government insider, upon meeting a group of EPA officials for the first time after arriving in Washington she declared, "Take a good look at me because in six months half of you will not be here."\textsuperscript{75}

Even more driven by values associated with the frontier ethic was James Watt, Reagan's first Secretary of the Interior. Before coming to Washington Watt was president of the Mountain States Legal Foundation (MSLF), a public-interest law firm dedicated, in his words, "to fight[ing] those bureaucrats and no-growth advocates who create a challenge to individual liberty and economic freedoms as expressed through the private enterprise system."\textsuperscript{76} In this capacity, as head of MSLF, he tried to prevent government officials from limiting livestock feeding on over-grazed land. He also went to court to limit government authority to review national forest lands for wilderness potential and to fight attempts by the Bureau


\textsuperscript{74} Cagin and Dray, 250.

\textsuperscript{75} Interview with a senior EPA official, (Spring, 1981). Courtesy of John Kirton.

of Land Management to restrict industry access to public lands.\textsuperscript{77}

Watt was outspoken about the effect he believed environmentalism was having on the United States. He argued, "I fear that our states may be ravaged as a result of the actions of the environmentalists...the greatest threat to the ecology of the West."\textsuperscript{78} Believing that nature had no inherent value and that the earth's resources existed simply to be harvested as efficiently as possible, Watt was determined, as head of the Interior Department, to revamp U.S. land-use policies. In his words, "We will mine more, drill more, cut more timber to use our resources rather than keep them locked up."\textsuperscript{79}

While not possessing quite the pro-technology, pro-progress and pro-capitalist values that James Watt did, Ronald Reagan himself was influenced by the frontier ethic throughout most of his life.\textsuperscript{80} For the duration of Ronald Reagan's political career he


\textsuperscript{78} Cagin and Dray, 233.

\textsuperscript{79} Cagin and Dray, 238.

\textsuperscript{80} Some commentaries on Ronald Reagan have suggested that even close friends and associates found it difficult to discern accurately the driving force behind the president. For example, the former First Lady writes, "He's not an easy man, although he seems easy. To everybody he seems very easy, but he is more complex than people think." Nancy Reagan as cited in Lou Cannon, President Reagan: The Role of a Lifetime. (New York: Simon and Schuster, 1991), 32. Yet a close examination of the many speeches Reagan made since entering politics reveals that they reflect the core values that he possessed while in office. The fundamental principles that Reagan expressed in public remained unchanged for over two decades.

An excellent example of how one of Reagan's central values, freedom, may be inferred from his speeches is provided in the
remained convinced of the "magic" of individual freedom. His unwavering support for the free market system stemmed from his view that laissez-faire capitalist economies produce limitless economic growth and material prosperity for society. \textsuperscript{81} Additionally, as former White House aide Richard Darman explained, "The president absolutely loathes and despises taxes." \textsuperscript{82} For Reagan, taxes were directly linked to big government and served only to limit individual initiative and hobble private enterprise and economic growth.

With these concerns near the top of his value hierarchy, Reagan came to the White House in 1980 calling for a reduction in the size of government, a cut in taxes, fewer regulations and a following passage,

In his 1964 national political debut, when he was supporting Barry Goldwater's presidential candidacy, Reagan spoke of the United States as 'the only island of freedom that is left in the whole world'. Sixteen years later, just before asking for the silent prayer in his acceptance speech, Reagan again spoke of 'the island of freedom', and called the United States 'a refuge for all those people in the world who yearn to breathe freely.'

President Reagan. (Washington, D.C.: Congressional Quarterly Inc., 1981), 21. Recognizing that many people have some difficulty understanding the motivations of Ronald Reagan, Lou Cannon nevertheless argues that the major themes and values that energized the president remained virtually unchanged while he was in office. Cannon, 35.

\textsuperscript{81} Reagan's convictions and values were greatly influenced by the time he spent as an employee of General Electric in the 1950s, visiting all of this company's 136 production plants. While on tour, Reagan, "was struck by the resentment of his business-oriented audiences to regulations imposed by the federal government and he forever afterward saw it as his mission to protect industry from government interference." Cannon, 534.

\textsuperscript{82} Cannon, 92.
rebuilding of military strength. Given his views about
government, a monolith that, "...does not solve problems, [but]
subsidizes them...", it is not surprising that environmental
problems requiring government attention were not of great concern
to him. The president-elect did not share the shallow ecology
values that many Americans and people in the environmental movement
espoused. His value hierarchy was such that the concern for human
health, conservation, future generations, the global ecosystem and
the preservation of natural resources was overshadowed by a desire
for an efficient, productive and freely operating economy.
Referring to environmentalists at a campaign stop in 1980 Reagan
declared, "What they believe in is no growth. What they believe in
is a return to a society in which there wouldn't be the need for
the industrial concerns or more power plants and so forth..."
One of his more famous quips revealing his value orientation
occurred in 1966 when he stated, "You know, a tree is a tree - how
many more do you need to look at?" Therefore, at the beginning

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83 Tom Griscom, "Core Ideas of the Reagan Presidency", in
Kenneth W. Thompson, ed., Leadership in the Reagan Presidency:
84 Cannon, 90.
85 Cagin and Dray (228) refer to the value system that
members of the Reagan administration brought to Washington as the
"philosophy of the open range". The philosophy of the open range
and the frontier ethic refer to the same set of values.
86 Cagin and Dray, 234.
87 Mark Green and Gail MacColl, Reagan's Reign of Error:
101.
of the Reagan administration many of the officials directly involved with environmental policy making were guided by value orientations that were associated most closely with the frontier ethic. Protection of the environment and human health was eschewed in order to promote freedom, efficiency and economic growth.

VII. Values and Acid Rain

a. Administration Officials

In contrast to the ozone layer case in the mid-1980s, mid-level officials in the EPA and the Departments of State, Interior and Energy were afforded much less leeway in pushing the United States forward with measures to control acid rain. The first EPA Administrator Anne Burford was extremely hostile to this issue, as were Interior Secretary James Watt and OMB Director David Stockman. Administration officials in the EPA supportive of acid rain regulation were fired or transferred to different offices. By the time William Ruckelshaus replaced Burford at the EPA in 1983 acid rain had become highly politicized within the United States and in relations with Canada. As such, until Reagan left office, responsibility for the final decision regarding SO_2 controls was given to senior administrative officials. Thus, Ruckelshaus himself spent the summer of 1983 in an unsuccessful bid to forge a consensus around an acid rain regulatory program. When Reagan declined to support the EPA administrator in these efforts, it

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became even clearer that government officials would not be able to pursue an acid rain control program without the support of cabinet members and the president. Given that mid-level officials had little role in determining whether the United States took the lead in responding to concerns about acid rain, only the values of the relevant senior decision makers are examined in this chapter.

The pace set by this administration on all environmental matters at the beginning of its first term typified the approach it took towards the problem of acid rain throughout Reagan's entire tenure as president. As key officials in the administration were guided by value systems dominated by the "frontier ethic", they maintained a policy response to acid rain that denoted a lack of international leadership.

The adherence to the frontier ethic, displayed by Reagan and others on acid rain, was quite strong in behavioural terms. In early 1982, EPA Administrator Anne Burford began backing away from the Memorandum of Intent on acid rain signed previously by Canada and the United States.\(^{89}\) Because the United States was unwilling to discuss \(SO_2\) and \(NO_x\) emissions controls the diplomats met for the last time in June of 1982 and formal negotiations, as part of the Memorandum of Intent, were never revived. Burford so radically opposed action to address this problem that she refused to even say the words acid rain but insisted on referring to this phenomena as

\(^{89}\) At this time the EPA changed its position and declined to endorse its earlier findings that scientific evidence indicated action on acid rain was required immediately. Park, 203.
"unbuffered precipitation".90

One indication of the dominant values that motivated Burford while at the EPA is provided by comments she makes about acid rain in her autobiography. It is clear that shallow ecology values were not paramount in the way she thought about this issue in the mid-1980s. In reference to acid rain she states:

The Clean Air Act requires that SO₂ and nitrous oxide levels be reduced to a point that is protective of the health of the frailest little old lady in the U.S., or the sickest little child...In almost every area we now have substantial compliance with that standard. This means that we are not really talking about a health issue here.91

Rather than concerns about human health, she suggests that the primary determinants of acid rain policy should be considerations of economic efficiency, material comfort, and prosperity. Burford argues, "...we have the technology to reduce it [acid rain] to zero. But it would be incredibly costly, and it would show up on your utility bill and on the price tag of every product that is produced by electricity."92

By 1983 pressure from environmental groups and the public had forced Reagan to oust EPA administrator Anne Burford and Interior Secretary James Watt. In an attempt to restore public confidence

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90 Interview with NRDC staffer Elizabeth Barratt-Brown, January 30, 1996, Washington, D.C.

91 Anne Burford and John Greenya, Are You Tough Enough? (New York: McGraw-Hill Book Company, 1986), 134. Burford (133) does concede in 1986, when this book was written, that acid rain is a "serious environmental hazard". However, she certainly did not make this argument while she was EPA administrator.

92 Burford and Greenya, 134.
and legitimacy to the EPA Reagan appointed William Ruckelshaus as new EPA head in the spring of 1983. Ruckelshaus promised to provide leadership on the question of acid rain controls and made a commitment to bring President Reagan four or five policy options after consulting with important stakeholders on this issue. During these efforts Ruckelshaus was driven by a mix of shallow ecology and frontier ethic concerns. Discussing environmental regulation in a 1985 article he suggests that the two primary concerns in this process must be human health and economic efficiency. He states:

My point is that in confronting any risk there is no way to escape the question 'Is controlling it worth it?' We must ask this question not only in terms of the relationship of the risk reduced [to human health] and the cost to the economy but also as it applies to the resources of the agency involved.93

As well, before coming to the EPA for a second time as administrator, Ruckelshaus was a lobbyist for companies fighting environmental regulation. He was also senior vice-president of Weyerhauser Ltd., a company cited and fined for polluting rivers and streams while producing timber and wood products.94 Ruckelshaus also revealed the importance he placed on frontier ethic values when he suggested in January of 1981 that in his role as EPA's first administrator "I am largely to blame for most of the bad things done to business by environmental regulations over the

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Ruckelshaus spent much of the summer of 1983 trying to achieve an agreement on acid rain controls. However, this juncture in the policy process constituted a lack of leadership by the United States even though the EPA administrator eventually presented Cabinet with a proposal that would cut four million tonnes, or 25 percent of SO₂ emissions, in five to seven years. In passing up this opportunity to take relatively modest measures to protect the environment from the effects of acid deposition members of the Reagan administration, and particularly David Stockman from OMB,  

95 Dugger, 98.

96 Ross Howard and Michael Perley, Poisoned Skies: Who'll Stop Acid Rain? (Toronto: Stoddart Publishing Company Limited, 1991), 221. It is tempting to characterize Ruckelshaus' efforts and final proposal as an example of the United States leading the way in trying to address this environmental problem. There are however, important reasons for not doing so. Specifically, the efforts made to resolve the acid rain problem at the domestic level were not translated to the international arena. At the time that Ruckelshaus was consulting various acid rain stakeholders, the United States was the only country in an international meeting in Geneva to not affirm that acid rain was a serious problem. "Acid Rain: Here, There, Everywhere", Arkansas Gazette. (Little Rock: June 11, 1983).

The EPA, during these summer months, was also seeking changes that would have made it easier for industry to pollute the air. In November of 1983 the EPA proposed to change the way SO₂ emissions were monitored so that 700,000 more tons of this chemical would escape into the atmosphere annually. It also attempted to double the amount of NOₓ automobile emissions permitted by law. Gould, 34. Finally, the proposal that Ruckelshaus did eventually present to Cabinet in the autumn of 1983 provided for SO₂ reductions (25 percent) that were significantly less than the 50 percent reductions called for by Canada in Geneva, a recent NAS scientific report and a report by a special advisory task force of the EPA itself. See "Acid Rain: Here, There, Everywhere", Arkansas Gazette. (Little Rock: June 11, 1983). Also see, "New Proof Should Spur Action on Acid Rain", The Buffalo News. (Buffalo: July 5, 1983), B-2 and "Hints of Action", Daily News. (McKeesport: August 9, 1983).
demonstrated a strong adherence to the frontier ethic. These
officials also revealed that they were not open to new ideas about
the acid rain problem. Prior to the Cabinet Council decision to
reject the EPA proposal, the president and other policy makers were
inundated with scientific information and reports that counselled
immediate action to curb acid rain. Gene Likens, and four other
well respected researchers in this field travelled to Washington in
September of 1983 and conveyed the high degree of scientific
consensus on the basic questions surrounding this issue to the
president and Cabinet.\(^{97}\) Earlier, an interagency task force
concluded that there was a direct link between industrial
pollutants that are emitted into the air and acid rain which has
already damaged northeastern lakes and streams.\(^{98}\) In addition, a
long awaited report released by NAS in the summer of 1983 went even
further and argued that a 50 percent reduction of \(\text{SO}_2\) emissions
would translate into a 50 percent reduction in acid rain
deposition.\(^{99}\)

Rather than convincing administration officials of the need to
limit acid rain damage, the new information was received through
normative lenses and simply strengthened pre-existing beliefs that
the science must be certain before imposing costly government

\(^{97}\) Interview with Gene Likens, January 12, 1996, Millbrook,
New York.

\(^{98}\) "New Proof Should Spur Action on Acid Rain", The Buffalo
News. (Buffalo: July 5, 1983), B-2.

\(^{99}\) "New Proof Should Spur Action on Acid Rain", The Buffalo
News. (Buffalo: July 5, 1983), B-2.
regulation on the private sector. Little weight was therefore given to these new ideas. Due to the conflict borne by intense industry lobbying against SO\textsubscript{2} controls and the lack of a critical event\textsuperscript{100} to evoke shallow ecology values, scientific knowledge played little role in directing government policy in this case.\textsuperscript{101}

It was David Stockman, director of the Office of Management and Budget, who trumped the pro-regulation arguments of William Ruckelshaus in the decisive cabinet meeting by presenting a cost-benefit analysis of various acid rain control proposals. Having revealed his intention to cut the EPA budget by 50 percent upon coming to OMB,\textsuperscript{102} Stockman remained intransigent on the question of acid rain controls because of their high costs.\textsuperscript{103} He was therefore instrumental in ensuring that the United States did not take the lead in devising an acid rain program on the domestic or

\textsuperscript{100} One acid rain scientist recalled during an interview the blunt comment of an administration official that, "If acid rain just killed somebody there would be more action." Confidential Interview, January 12, 1996, Millbrook, New York.

\textsuperscript{101} Although an EPA study in 1981 indicated that SO\textsubscript{2} emissions were responsible for over 50,000 human deaths per year (Park, 1987, 201), acid rain never came to be regarded as a "health" issue by members of this administration, or by the public. This is in direct contrast to the CFC issue that from its beginnings elicited fears, inside and outside of government, about skin cancer and other ailments caused by ozone layer depletion.

\textsuperscript{102} Apparently this view was shared by other officials at OMB. While Dr. John Hernandez was being interviewed for the job of EPA administrator in 1980, he was asked by Fred Khedouri, OMB's budget director for EPA, "Would you be willing to bring EPA to its knees?" Burford and Greenya, 84.

international fronts. By calculating at the 1984 cabinet meeting that a major acid rain program would cost the equivalent of $66160 for every fish saved, Stockman demonstrated a serious misuse of cost/benefit calculation as a form of policy analysis. In doing so, he also revealed the predominant place of economic growth and material prosperity in his hierarchy of values. Stockman's insistence that the monetary costs of regulation be the only relevant factor in determining the administration's policy on this issue suggested much less importance was placed on concerns for human health, globalism, future generations, equality, and environmental preservation.

b. Ronald Reagan

Evidently, Reagan was very sympathetic to this way of conceptualizing the problem of acid rain and to the various concerns that Stockman raised. In this important cabinet meeting Reagan supported Stockman and others in the Departments of Energy, Interior and Commerce and rejected Ruckelshaus' proposal for a 25 percent decrease in SO₂ emissions. The president did not view acid rain as a public health issue. For example, after declaring that he favoured a greater use of coal as an energy source during a

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104 "Generic Policy Question: Is a Major Sulphur Reduction Program to Control Acid Rain and Its Alleged Environmental Effects Warranted and Justified?", Office of Management and Budget, Cabinet Committee on Natural Resources and the Environment. (September 21, 1983), 20.

105 Interview with Courtney Riordan, EPA official, January 16, 1996, Washington, D.C.
radio broadcast in 1979, he went on to describe to his audience an old wife's tale that the prevailing winds blowing over the Santa Barbara oil slicks off the Coast of California improve people's health. Clearly the frontier ethic values held by the president greatly influenced and biased his perception of even the most rudimentary physical processes.

Reagan did not wish to impose new air pollution restrictions on U.S. industry. Rather, the desire to maintain corporate freedom from government regulation in order to enhance economic growth prevailed at this cabinet meeting. Reagan's earlier comments on the environment in a national address in 1982 demonstrated that he viewed growth of the economy as the primary goal of society and environmental regulation as only a possible means to achieve that end. He stated, "...we need to pass the clean air bill which, while protecting the environment, will make it possible for industry to rebuild its productive base and create more jobs." In keeping with the dominance of frontier ethic concerns in his value orientation Reagan imbued science and technology with the promise of infinitely expanding the material prosperity of the peoples of the world. In a speech at the White House in 1986 he

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106 Dugger, 72.
107 Cannon, 533.
argued:

Some say that about 90 percent of all scientific knowledge has been generated in the last 30 years alone, and we'll likely double it by the end of the century. Such an explosion of knowledge creates an unprecedented opportunity to expand the global economy.¹⁰⁹

The president was convinced that, given enough time, science and technology would provide the means for U.S. industrialists to exploit coal reserves without contravening environmental regulations.¹¹⁰ During his presidential debate with Jimmy Carter Reagan stated: "With our modern technology we can burn coal within the limits of the Clean Air Act. I think, as technology improves we'll be able to do even better with that."¹¹¹

His confidence in the promise of science and technology to promote economic growth found expression in U.S. acid rain policy when he endorsed the Special Envoys’ Report of 1986 that recommended a five year, five billion dollar research program into clean coal technology.¹¹² Opting for the possibility of a future

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¹¹⁰ Reagan saw promise in future technological solutions, not because they would protect human health, but because they would facilitate the full use of nature's resources. The fact that his administration repeatedly attempted to weaken the Clean Air Act suggests that the protection of human health was not one of his major concerns. As such, Reagan was driven by the frontier ethic in the value he ascribed to science and technology in the acid rain case.


¹¹² Drew Lewis and William Davis, "Joint Report of the
technological solution to permit the increased utilization of domestic coal reserves, he rejected an important opportunity to make the United States an international leader by taking action to curtail the damage being done by acid rain to the U.S. and Canadian ecosystems.

What initiative the United States did demonstrate in supporting more scientific research into this phenomenon was severely compromised by its unwillingness to follow through with the terms of the agreement. Criticism of the administration's implementation of the Envoys Report's recommendations was so intense that Canada once again renewed its demand for a 50 percent reduction in acid rain causing emissions by the United States.\textsuperscript{113} This criticism followed the Reagan administration throughout its second term in office because it repeatedly declined to take action on this issue. Even when Britain, the other major acid rain hold out, finally agreed to cut SO\textsubscript{2} emissions in late 1987, the United States remained intransigent on this issue.\textsuperscript{114} Indeed, this administration passed up one of the last opportunities for leadership it would have when it refused to sign the Sophia Protocol in 1988. This agreement mandated a freeze in NO\textsubscript{x} emissions. The importance of frontier ethic values in Reagan's approach to acid rain was therefore underscored by the strength of

\textsuperscript{113} Ralph C. Bledsoe, "Memorandum for the Domestic Policy Council Meeting - Implementation of the Special Envoy's Report - Recommendation 1: Demonstration Program Funding", (March 6, 1987).

\textsuperscript{114} Park, 1987, 189.
his adherence to these values throughout the development of the acid rain policy process.

c. Industry Officials

The historical record also reveals that many of the industry leaders responsible for the production of SO$_2$ emissions possessed values commonly associated with the frontier ethic for the entire time that Reagan was in office. While some corporate officials did indeed come out and support the idea of acid rain regulation, there is little evidence to suggest that this was a result of a shift in the values that they used to approach this issue. In the absence of any transformation in the value systems or worldviews of these officials, there remained great opposition to action on acid rain by U.S. industry into the 1990s. In contrast to the ozone depletion case, no window of opportunity ever opened up in the 1980s for policy makers to take advantage of a decrease in interest group opposition and pursue a leadership role on this issue. This occurred, in part, because most industry officials remained committed to values associated with the frontier ethic.

Analysis of the interest group opposition to acid rain controls reveals that key industry leaders repeatedly presented a few core arguments to legitimate their position on this issue. In a general way these arguments reflect the core values that motivated decision makers in the industries responsible for acid rain pollution. For example, during an interview, a senior official at one of America's largest coal producers stated that the
primary value he and other officials were driven by during this time was the concern for corporate growth and, in particular, the investment of capital based on future revenue.\textsuperscript{115} He argued that, in taking action to limit SO\textsubscript{2} emissions, the Reagan administration would have closed off this vital stream of revenue. At no time was there any mention by this corporate official of the effects that acid rain was having on the environment. Rather, reference was repeatedly made to the fact that the company this official represented had lost a number of coal contracts and had shut down many coal mines due to acid rain legislation brought in by the Bush administration. Evidently, since Bush moved to reduce acid rain in 1990 coal production for this company has dropped significantly and the price of coal has diminished considerably.\textsuperscript{116} The economic impacts of acid rain controls clearly determined the way this industry official thought about SO\textsubscript{2} regulation.

Another illustration of the way that the drive for profitability and economic growth overshadowed the desire for environmental protection or the concern for future generations in many acid rain industry officials is revealed in the following exchange. This discussion occurred between Dr. Frederick of the Public Service Company of New Hampshire (an electric utility

\textsuperscript{115} Interview with Richard L. Kerch, January 25, 1996, Washington, D.C.

\textsuperscript{116} Interview with Richard L. Kerch, January 25, 1996, Washington, D.C. In some areas coal production dropped over the 1980s and not just since Bush took office. In areas such as southern West Virginia and the West, the production of low-sulphur coal has increased since 1990. Courtesy Don Munton, International Studies Program, University of Northern British Columbia.
company) and Senator Gordon J. Humphrey in the 1983 Senate hearings on acid rain.

Dr. Frederick:

"We support legislation that is reasonable and makes sense."

Senator Humphrey:

"So what is reasonable? It's hard to pin those things down. What do you consider reasonable? Are any of the bills pending reasonable in the eyes of the Public Service?"

Dr. Frederick:

"I can't say. We evaluate them, we look at them. But as I say, we haven't run any detailed economic analyses on those things to see how they affect our company."

Senator Humphrey:

"What are the unanswered questions you referred to in your testimony?"

Dr. Frederick:

"Unanswered questions? Will, in fact, a reduction in emissions result in a measurable decrease - or rather increase in pH?"

Senator Humphrey:

"Don't you feel that question was answered by the NAS study?"

Dr. Frederick:

"The NAS study did come out with some conclusions, but it dealt mainly in regionwide generalities. They said that over the entire region a reduction in SO\textsubscript{2} emissions will yield a decrease in acidity. But over an entire region. But whether this applies specifically to a small region, what economically is the advantage of that?"
"We in Congress have a lot more to deal with than the problems of New Hampshire...we have to address it on a national basis, don't you agree?"

Dr. Frederick:
"Yes."

Senator Humphrey:
"Then why is it relevant to wonder about whether it will work on a state-by-state basis?"

Dr. Frederick:
"Because we own and operate in the state of New Hampshire."\footnote{117}

By suggesting that the only important implications of the decrease in regional acidity described by the National Academy of Sciences are economic in nature, Dr. Frederick revealed that the principles associated with shallow ecology are not high in his value system hierarchy. While it is difficult to generalize over a whole population of industry officials, there is very little evidence that corporate leaders opposed to acid rain controls were ever motivated by shallow ecology values, including a concern for human health, globalism, equality, future generations, and environmental protection and preservation. Instead, great faith was placed in the role of science and technology to provide the needed "answers" to allow industry to continue production and increase profitability and economic growth.

In summary, there was an important absence of some type of critical event in the acid rain case that might have elicited shallow ecology values in key decision makers. For this reason government officials in Washington, and the corporate elite in the \( \text{SO}_2 \) emitting industries, adhered to frontier ethic values and were not induced to take a leadership role and support \( \text{SO}_2 \) regulation. In the face of intense political wrangling between various stakeholders, government officials remained unreceptive to new scientific ideas and information that suggested regulatory action was needed. As these conditions did not change significantly while Reagan was in office the stalemate over acid rain continued until George Bush came to power.

VIII. Values and Ozone Layer Depletion

The ozone layer depletion issue differed from acid rain in that there was eventually a move away from the frontier ethic and the Human Exemptionalist Paradigm by some important members of the administration, including the president himself, and by decision makers in the CFC industry. The concluding part of this chapter highlights the main differences between these two environmental cases in this regard, and suggests why they are important for understanding the Reagan administration's policy response to them.

To begin, it should be recognized that not all of the key policy makers in the Reagan administration responsible for its leadership role on ozone depletion experienced a value shift before deciding to act on this issue. In fact, early U.S. leadership on
CFC regulation dating back to 1983 or 1984 was largely the work of a handful of EPA and State Department officials that never possessed anything close to the frontier ethic characteristic of other members of the administration such as Burford or Watt. They were also quite different from key acid rain industry officials in that they were imbued with many of the values and principles associated with shallow ecology. This fact alone goes far in explaining why the United States took a leadership role in the CFC case but not on acid rain controls.

Steve Seidel, James Losey, Joe Cannon, and especially John Hoffman - head of EPA's Office of Strategic Studies,\(^\text{118}\) began to recognize ozone depletion as an important issue when most other people in this agency were quite willing to ignore it.\(^\text{119}\) Hoffman and Seidel were especially less inclined to view nature simply as a repository of materials for human exploitation. Rather, they valued the natural environment and its effects on human health as much as the imperative of economic growth. They therefore immediately began to work towards changing U.S. policy on CFC

\(^{118}\) Upon his arrival at the EPA, William Ruckelshaus made Joe Cannon the associate administrator for Policy, Planning and Evaluation. Stephen Seidel and James Losey were policy analysts with EPA's Air and Radiation Office.

\(^{119}\) Confidential interview with an EPA official, January 22, 1996, Washington, D.C. Sharon Roan notes in her discussion of the events leading up to the Montreal Protocol that only nine people in the EPA worked on the issue of climate change or stratospheric ozone depletion in the mid-1980s. Given that the EPA employed more than 12000 people at this time, it is evident that these issues were given very low priority by the senior officials in this agency. Sharon Roan, Ozone Crisis: The 15-Year Evolution of a Sudden Global Emergency. (New York: John Wiley & Sons Inc., 1989), 157.
regulation so that a leadership role became possible. Steve Seidel revealed part of what motivated him to take action on the CFC issues by stating that:

My personal view was that yes, there was a substantial threat to the environment and the challenge was to manage an effective response to that threat. It's really managing the response in such a way that we would achieve the objectives, and that means convincing the industry that they need to act.\textsuperscript{120}

John Hoffman implicitly reiterated this viewpoint when he stated: "The reason I was working on this stuff [the CFC issue] is because I thought it was important. I think that stratospheric ozone and climate change are the only really big environmental issues of the world".\textsuperscript{121} Adhering to these shallow ecology values, this small group of officials took action in 1983 to have the CFC issue transferred to the Office of Air and Radiation, where they had authority, when the Toxics Office seemed to be backing off from this issue.\textsuperscript{122} Therefore, a deep concern for human health and possible damage to the environment by CFCs on the part of mid-level EPA officials instigated a new period of U.S. leadership on this issue.

\textsuperscript{120} Interview with Steve Seidel, January 29, 1996, Washington, D.C.

\textsuperscript{121} Interview with John Hoffman, January 22, 1996, Washington, D.C.

\textsuperscript{122} Cagin and Dray, 258. The Advanced Notice of Proposed Rulemaking (ANPR) had been published in October 1980 under the Carter administration and outlined obligations for the EPA to restrict CFCs in the future. For three years under Burford the Office of Toxic Substances, responsible for implementing the ANPR, had been arguing that there was too much scientific uncertainty to go through with Phase Two of the regulations that required restricting nonessential CFC production. Roan, 114.
a. Critical Event - Discovery of the Ozone Hole

The critical event that focused greater attention on problems associated with the emission of CFCs was the discovery of the Antarctic ozone hole in May of 1985. This discovery, in the guise of new scientific knowledge, took many scientists and policy makers by surprise as few had surmised that such a large dissipation of stratospheric ozone over one area was even possible. In effect, the new information precipitated a change in the generalized beliefs or worldview that a number of people involved with this issue had about the mechanisms that govern the natural environment and about our ability to understand and control these mechanisms. Most important was the growing realization that in some very important respects the earth may not be as stable and resistant to human exploitation as we have become accustomed to believing. Rather, as the ozone hole revealed to scientists and the public in a very dramatic way, ecological systems may have multiple equilibria and be susceptible to human interference on a grand scale. Thomas Homer-Dixon notes, "...a paradigm-shattering example of such non-linear or 'threshold' effects in complex environmental systems was the discovery of the Antarctic ozone hole

123 The British scientists that discovered the ozone hole were so surprised by their measurements that they delayed publication of their results for nearly three years while they reviewed their data and checked their instruments for accuracy. Roan, 125.

in the mid-1980s." Based on discussions with fellow colleagues at the EPA, a senior official in this agency revealed how this discovery changed people's general beliefs when he stated, "The real thing that made the Montreal Protocol possible was the ozone hole. People recognized that...we are affecting a major global process as a result of these emissions." 

The scientific revelations that constituted this critical event also played a role in shifting the HEP by reinforcing the belief that the earth is a fragile entity. Not only were humans thought capable of destroying, or at least greatly altering, some major natural systems such as the earth's climate, but we now appeared to be able to actually threaten human existence on this planet through our activities. And for many people, including decision makers inside and outside of government, this event made it clear that science may not even be able to inform us when a major ecological disaster is occurring. Nor did it seem that science could predict exactly what the consequences would be. Not surprisingly, policy makers in the United States began to view this issue in ways that emphasized greater caution towards the environment.

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125 Homer-Dixon, 80.

126 Interview with Courtney Riordan, January 16, 1996, Washington, D.C. A number of officials I interviewed agreed that the discovery of the ozone hole was of critical importance in pushing the United States and other countries to sign the Montreal Protocol. For example, a senior scientist at NAS argued, "The big change came of course with the observations in the Antarctica and the explanation of those was very clear....and this is what really pushed everyone over the edge." Interview with Myron Uman, January 23, 1996, Washington, D.C.
Having been deeply involved in U.S. efforts to create an international agreement regulating CFCs, James Losey and Steve Seidel argued that the belief by EPA officials that the risks associated with ozone depletion demanded precautionary intervention was crucial in getting action to halt CFC emissions. Losey and Seidel therefore called for an "insurance policy" in light of the recent discovery of actual ozone layer depletion.\textsuperscript{127} In addition, administrator Lee Thomas who led EPA efforts to create a CFC agreement commented that, "Where there was uncertainty, they thought we needed more research and I thought we needed to be cautious. We just looked at the same science and came to two different conclusions."\textsuperscript{128} Even decision makers inside CFC giant DuPont began to approach this issue with a different set of beliefs about human-environment relations. Instead of emphasizing the need for scientists to show that these chemicals were harmful before regulation occurred, DuPont officials were declaring by mid-1986 that, "It would be prudent to limit CFCs while science continues to work to provide better guidance."\textsuperscript{129}

In addition to imparting a challenge to the human centred worldview held by many officials in the Reagan administration and in the CFC industry, the discovery of the ozone hole also shifted

\textsuperscript{127} Litfin, 100.

\textsuperscript{128} Litfin, 78. In making this comment Thomas was referring to members of the administration that did not support CFC regulation.

\textsuperscript{129} Forest Reinhardt, "National Wildlife Federation - Du Pont Freon Products Division (B)", (1989), 14.
the value orientation of these decision makers. The idea that a hole in the stratosphere had developed that was 18.8 million square kilometres in size or, twice as large as the continental United States, was truly cataclysmic in its effects on policy makers and the public. The NAS reports of 1979, 1982 and 1984 that policy makers had looked to for guidance had predicted 16.5 percent, 5.9 percent and 2.4 percent ozone layer depletion by the late twenty-first century respectively. People in the scientific community, interest groups, and within government were therefore stunned when Joseph Farman published his data in 1985 that indicated a 30 to 40 percent loss in ozone above Antarctica. Not only were the existing atmospheric models incorrect but scientists were evidently unable to explain this phenomenon and provide information to reduce uncertainty about the future state of the ozone layer. The ozone hole was soon viewed to be a possible threat to human existence on earth. Not surprisingly, this had a great emotional impact on people, creating widespread fear and unease about the state of the earth's protective shield. One mid-level EPA official argued:

People recognized that...we are affecting a major global process as a result of these emissions. When you talk about affecting global processes I think that everybody has to take stock. Everybody has to stand back and say 'Oh my God, are we going to create a lifeless planet because of UVB exposures?'

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130 Cagin and Dray, 285.
131 Reinhardt, 6.
132 Interview with Courtney Riordan, January 16, 1996, Washington, D.C.
The inability of the scientific community to provide information that was not mired in uncertainty until the Ozone Trend Panels Report of 1988 meant that this shocking event had more of an effect on decision makers than simply a shift in their beliefs. The dramatic impact of the ozone hole discovery on these officials served to evoke in them values associated with shallow ecology. A deep concern for the health of people alive today and for those living in the future became the overriding issue as did protection of a natural system thought to be very fragile and susceptible to irreversible damage. In effect, the hierarchy of values was transformed and the principles associated with the frontier ethic that had previously guided their behaviour on CFC regulation including efficiency, freedom, individualism, economic growth, progress, and material comfort, began to wane.

Ultimately, as events unfolded during the life of this issue, the shallow ecology values that became predominant in many decision makers had two important effects on policy making. First, they had a direct influence on policy making by pushing these individuals to action. But they also had an indirect effect by providing normative coloration to the new scientific evidence that became available during the Montreal Protocol negotiations such as the

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133 Interviewing many of the key decision makers active in the ozone layer discussions, Seth Cagin and Philip Dray (361) lend support to the argument that this issue evoked a strong moral reaction from people in the following passage, "Time and again in the course of researching this book we were struck by the powerful moral responses people had to the CFC issue, and the ease with which the discussion turned to the question of survival and of humankind's place in the cosmos."
WMO/NASA report of 1986. This new knowledge now reinforced their recently revised beliefs (due to the Antarctic ozone hole discovery) about the fragility of the earth and the need to protect human health. Consequently, great weight was given to this information in deliberations about future CFC regulation even though scientific consensus about the causes and effects of ozone layer depletion was still lacking.

At a meeting in March of 1986 EPA administrator Lee Thomas revealed the high value he attached to the CFC issue by stating that it was "as potentially vast as any I have to deal with as administrator of the EPA." The seriousness and deep concern with which Thomas approached ozone depletion accounts for his decision, in the autumn of that year, to bring to the upcoming international negotiations in Geneva a U.S. proposal for an immediate freeze on the production of CFCs and a reduction in emissions by 95 percent over the next decade. The aggressive nature of this proposal, calling for a virtual phase-out of CFCs rather than just a freeze in production, surprised many EPA staffers and was crucial in positioning the United States to lead the way in the international discussions. There is little doubt that shallow ecology concerns ranked quite high in Lee Thomas' value hierarchy. In a memorandum to the Domestic Policy Council, just prior to the interagency debate over CFC controls in the summer of 1987, he outlined what he saw as the overriding goal of this agency. Thomas argued that the

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134 Roan, 146.

135 Cagin and Dray, 311.
"mission" of the EPA consisted of "achieving maximum protection of human health and the environment within the limitations of cost to society, available scientific knowledge, statutory authority, and public understanding."\textsuperscript{136}

Even before international negotiations resumed after the signing of the Vienna Convention, Richard Benedick of the State Department and other EPA officials embarked on a protracted effort to have other countries follow the lead of the United States in supporting measures to limit CFC emissions. During this time Benedick travelled to Brussels and Bonn to speak with policy makers and make the case for strong controls of these chemicals. With similar goals in mind, officials from EPA, NASA and NOAA conferred with scientists in India, Egypt and Australia.\textsuperscript{137} These information sharing activities were quite important in setting the stage for the upcoming talks by ensuring that most of the participating states were aware of the United States position on these issues.

Around the time that Benedick was pushing for a strong ozone layer treaty he was expressing in a very direct manner the values that were motivating him to take action on this issue. Speaking to Congress in October of 1986 he stated,

\begin{quote}
The continued use of chlorofluorocarbons [CFCs] is likely to lead to depletion of the Earth's protective stratospheric ozone layer. The effects of this depletion will strike at the very core of everyone's...
\end{quote}

\textsuperscript{136} Lee Thomas, "The Future of Environmental Policy - Memorandum to Domestic Policy Council", (February 13, 1986).

health and environmental well-being. I do not mean just the health of all Americans. I mean the health of everyone on this Earth.138

In his book Ozone Diplomacy: New Directions in Safeguarding the Planet, Benedick suggests that concerns about the long-term destruction of the earth and its inhabitants by ozone depletion motivated many U.S. officials to take action. He states, "The negotiators of the Montreal Protocol dealt with dangers that could touch every nation and all life on Earth, over periods far beyond the normal time horizons of politicians.139

Similarly, in one of the position papers prepared for the Leesburg negotiating session in September of 1986, Stephen Anderson from the EPA revealed some of the underlying concerns shaping U.S. policy. He argued that, "the foremost concern for future generations is the protection of the ozone layer; access to CFC products is a secondary concern."140 In total he referred to the interests of people not yet born six times in this paper, a clear indication of the high value he placed on this aspect of the issue.

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139 Richard Elliot Benedick, Ozone Diplomacy: New Directions in Safeguarding the Planet. (Cambridge: Harvard University Press, 1991), 3. When citing the harmful health effects of ozone depletion, Benedick (21) highlights the estimate made by the EPA that there would be 150 million new cases of skin cancer by the year 2075 without the regulation of CFCs.

b. Industry Officials

There is much evidence that a shift in values, precipitated by new knowledge of the discovery in Antarctica, contributed to the CFC industry's decision to accept the possible regulation of these chemicals. Robert Watson, a government scientist active in the political circles at the time, suggested that the ozone hole was behind industry's "philosophical reorientation". However, the value shift in these corporate officials did not occur immediately after news of the ozone hole became available to industry officials. In March 1986, approximately six months after industry officials learned of Joseph Farman's paper, the head of the Alliance for A Responsible CFC Policy responded to the EPA's Stratospheric Protection Plan by arguing, "We do not concede that there is an environmental problem in terms of the immanent threat to civilization or human health." It was still another half a year before the CFC industry publicly registered its support for international negotiations aimed at controlling CFC production and consumption.

This hesitancy on the part of industry should be construed as

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141 Litfin, 99.
142 Joseph Glas argues that DuPont officials received information about the ozone hole discovery in "late 1985". Joseph P. Glas, "The Phase-Out of CFCs: The End of One Era and the Beginning of Another", (DuPont Fluoro Products, December 20, 1995), 8. It is reasonable to assume that other people in the CFC industry became aware of this phenomenon about that time as well.
143 Glas, 8.
144 Roan, 147.
a delay in a value shift and not evidence that the value orientation of these individuals remained unchanged. Self-interest likely dictated to industry decision makers that they should respond to the recent scientific findings with caution and not undue haste. As noted above, there was increasing demand for CFCs in the mid-1980s and therefore the promise of increasing profits from this line of business. Such considerations undoubtedly had the effect of delaying the shift in values many of these officials eventually did experience. The fact that many of the key decision makers at DuPont, the largest and most influential CFC producer, were originally trained as scientists also explains their reluctance to immediately accept reports of an ozone hole. This was especially the case considering the scientific controversy over the accuracy and significance of Farman's data.¹⁴⁵ When DuPont's own two-dimensional models showed that sustained expansion of CFC emissions would eventually deplete ozone the decision was made to consult the Alliance and then announce support for the international efforts to address this environmental problem.¹⁴⁶

The value shift industry officials experienced became more apparent at this time as they began urging caution in the way the ozone layer was treated by humans, as well as caution towards how the CFC industry was affected by government actions.¹⁴⁷ They were

¹⁴⁵ Cagin and Dray, 292.
¹⁴⁶ Glas, 9. See also Reinhardt, 14.
¹⁴⁷ Litfin (97) notes that after the discovery of the ozone hole, "The existence of scientific uncertainty continued to function as a justification for caution, but the meaning of caution
also, for the first time, beginning to emphasize the importance of shallow ecology values (especially human health), in their public and private statements on this matter. For example, in commenting on the way industry changed its position after 1986, one senior corporate official with the Alliance suggested that they had tried to balance environmental protection and economics. He stated, "On ozone our industries had taken the position that the long term risks...to the environment and ultimately to their companies...were unacceptable and that it was time to do something."  

Joseph Glas, in charge of the Freon Products Division at Dupont, noted in interview that the ozone hole had "a big impact" on this company. He added that he did not make an economics or impacts calculation before deciding to recommend to the DuPont leadership that this company support the regulation of these chemicals. Finally, the move towards greater concern about the environment and human health is most clearly revealed in the following statement by Alliance chair Richard Barnett, "On the basis of current information, we believe that large increases in fully halogenated CFCs...would be unacceptable to future generations and, in our view, it would be inconsistent with the goals of this Alliance to ignore the

shifted dramatically...it was the ozone layer and not the CFC industry that deserved to be treated as a fragile entity."


149 Interview with Joseph P. Glas, January 26, 1996, Wilmington, Delaware.
potential for risk to those future generations." Barnett then went on to discuss the need to develop a responsible CFC policy that would, among other things, "provide some assurance that we never reach the 'doomsday' scenarios that have been put forth." The new direction in Alliance policy would not likely have occurred without the earlier discovery of the ozone hole and its ability to evoke concerns about human health and the environment in key corporate decision makers, and in the American public in general. 

150 Barnett, 2.
151 Barnett, 2.
152 It is interesting to trace the arguments that the CFC industry, represented by the Alliance, used to justify their policy positions over the course of the CFC debate. What one immediately notices is that this organization used virtually identical arguments to oppose regulation from 1974-1986 and then to support international efforts to regulate CFCs after 1986. For example, in a letter to the National Clean Air Coalition, Donald R. Strobach, science advisor for the Alliance, argued that regulation of CFCs was ill advised in 1983 because a lot of scientific uncertainty existed and the atmospheric models did not predict ozone depletion would occur "for at least the next several decades". Donald R. Strobach, "Letter to the National Clean Air Coalition", (June 10, 1983), 2.

Now compare the following statement made by chairman Richard Barnett of the Alliance when he announced that organization's support for international CFC negotiations in September of 1986.

The science is not sufficiently developed to tell us that there is no risk in the future. In fact, all of the computer models calculate that large future growth in CFC emissions may contribute to significant ozone depletion in the latter half of the next century.


The similarity between these two statements suggests that it was not just a change in causal beliefs that instigated a change in the industry position as some officials argue. Rather, the reversal in policy was likely a result of a number of factors including a shift in the worldview and values of some key industry decision makers.
It is tempting to suggest that during this time DuPont officials were motivated only by frontier ethic values. They sought an opportunity to exploit the very profitable substitute market that would emerge in the wake of CFC regulation. Much of what has been written about the creation of the CFC regulatory regime makes this argument.\textsuperscript{153} There is however, little evidence to support this claim. During the early 1980s DuPont management made a concerted effort to slash costs in the Freon Products Division. As a result, DuPont officials believed that these actions had made this company the most competitive low-cost CFC producer in the United States by 1987.\textsuperscript{154} Further, in a joint venture with Mitsui Petrochemical Industries Ltd., DuPont announced plans in 1986 to spend $60 million expanding its fluoroproducts production capacity in Japan.\textsuperscript{155} Thus, at a time when the demand for CFCs was growing (mid-1980s), and DuPont had just strategically positioned itself to profit most from future sales of these chemicals, there were few financial reasons for DuPont to publicly support CFC regulation.

In addition, DuPont had spent practically nothing on CFC substitute research from 1981-1985\textsuperscript{156} and therefore was not likely


\textsuperscript{154} Reinhardt, 63.

\textsuperscript{155} "DuPont, Mitsui Venture Has Plans to Expand Its Fluoroproducts Output", \textit{Chemical Marketing Reporter}. (March 10, 1986).

\textsuperscript{156} Reinhardt, 12.
"waiting in the wings" to dominate the new alternatives market.\footnote{157}

While the transition from producing CFCs to substitute chemicals did involve possible rewards there was also much risk and uncertainty for DuPont and other CFC producers.\footnote{158} Indeed, Maxwell and Briscoe note that after CFCs were regulated the electronics industry eliminated the most profitable part of DuPont's remaining CFC business by developing their own CFC 113 substitutes.\footnote{159} An examination of the CFC substitute market today reveals that DuPont has not made any significant inroads into the European market.\footnote{160}

By adhering to these newly evoked values and announcing support for the regulation of CFCs, officials in the Alliance and DuPont ushered in a new period in the evolution of ozone policy in the United States. This move by industry in September of 1986 was of great importance because it provided a window of opportunity for those policy makers in the EPA and in the State Department who were pushing for a leadership role by the United States. Having industry support for the ongoing international negotiations removed a major obstacle to Hoffman and others in the EPA who were developing a strong U.S. negotiating position. Opponents of regulation in Washington could no longer claim the support of a


\footnote{158} Interview with NRDC official Alan Miller, January 26, 1996, College Park, Maryland.

\footnote{159} Maxwell and Briscoe, 283.

\footnote{160} See Benedick, 1991.
very powerful domestic lobby. One senior official from the Alliance described the effect of industry support for international negotiations in the following manner:

The clearest change [in U.S. policy] came when industry came out in support of it [regulation]. Because people up on the Hill, the Democrats, said 'My God, even industry is supporting regulation'. And Lee Thomas was using this. So the fact that even the industry was saying this was a bad situation in many respects cleared the way for EPA and State Department to take the ball and run with it.161

However, not all administration officials were guided on this issue by the desire to protect human health and the environment. Even with industry support for regulation there was still some resistance within the administration to an aggressive U.S. position on CFC controls. For this reason, officials in the Reagan administration pushing for a strong international treaty eventually had to gain approval from the president for the international pace they were setting during these negotiations.

c. Ronald and Nancy Reagan

Admittedly, there is only circumstantial evidence that Ronald Reagan underwent a value shift in the mid-1980s and, for that reason, supported CFC regulation. There is no direct confirmation available from people who were close to the former president that he was motivated by shallow ecology values rather than the desire to further economic growth, productivity, efficiency, individualism or material comfort when he supported the strong U.S. CFC

161 Confidential Interview, January 18, 1996, Arlington, Virginia.
negotiating position in 1987. Consequently, it is not possible to
determine exactly how important Reagan's values were in shaping the
way the United States responded to this environmental problem.
Nevertheless, a number of public statements on the ozone layer
issue by Reagan, in conjunction with a sizeable amount of indirect
evidence suggests that, in dealing with this issue, he moved away
from values associated with the frontier ethic and was instead
motivated by considerations associated with human health and
environmental protection.

The role of shallow ecology values in Reagan's decision to
support a strong CFC treaty is suggested by the fact that a number
of scholarly sources, as well as comments made by the president,
indicate that health was an important issue for both him and his
wife and often affected their behaviour. In addition, the Reagans
eventually came to see ozone layer depletion as a serious personal
health risk as well as a risk to everyone living on the planet.\textsuperscript{162}

By identifying the CFC debate as primarily a health issue involving
an increased risk of skin cancer, the discovery of the ozone hole
forged for the Reagans an sense of imminent danger to the health of
everyone in the world from ozone depletion. It also forged for

\textsuperscript{162} The role played by the president's wife is an important
variable in this case because she often initiated and sustained the
health concerns that Reagan had in his life. She also had
influence over some of the decisions that her husband made while he
was in the White House. Sterling Kernek, "Reagan's Foreign Policy
Leadership", in Kenneth W. Thompson, Foreign Policy in the Reagan
Presidency: Nine Intimate Perspectives. (New York: University Press
of America, 1997), 16. Also see Frances Leighton, The Search for
the Real Nancy Reagan. (New York: Macmillan Publishing Company,
1987), 124.
them a personal connection to the dangers associated with this environmental problem. In this manner it shaped their decisions on this issue.

There is much evidence that Reagan and his wife were quite conscious about their physical well-being and placed great importance on it. According to the president's doctor, Nancy Reagan was insistent on having full physical examinations every six months.\textsuperscript{163} For his part, Ronald Reagan ate very well, exercised on a regular basis to keep in shape, and took great care not to overwork himself.\textsuperscript{164} In a television interview with Mike Wallis, shortly after Reagan left office, he and his wife highlighted the place of health as a central value in their relationship. In response to Mike Wallis' question, "What has been the best time of the presidency?" Nancy Reagan answered, "When he came home from the hospital." Ronald Reagan then responded, "When she came home from the hospital."\textsuperscript{165}

There were several notable events indicating that the Reagans adhered to the high value they placed on health and well-being in their everyday behaviours. After the Second World War Ronald


\textsuperscript{164} Cannon, 24. Reagan use to respond to media reports that he was not a hard worker by using humorous comments that poked fun at himself. On one occasion he stated in public, "It's true hard work never killed anybody, but I figure why take the chance?" Cannon, 120. While quite funny this remark is indicative of Reagan's recognition of the importance that rest and relaxation have on his well-being.

\textsuperscript{165} Mike Wallis, "Interview with Ronald and Nancy Reagan - 60 Minutes", 1988.
Reagan became convinced that his luck had run out with respect to air travel. As a result, he didn't fly once from 1946 until he became governor of California in 1966 even though he travelled a great deal during this time.\textsuperscript{166} In addition, after a very close friend of the Reagans', Robert Taylor, died of lung cancer in 1969, they both decided that the health risks of smoking were too great and immediately quit this habit.\textsuperscript{167} Evidently, when confronted with new information or ideas that indicated a future threat to their health and happiness, the Reagans were quite willing to change their behaviour in ways that would ensure a long future together.

Becoming increasingly aware and knowledgeable of the dangers associated with ozone layer depletion, the Reagans likely forged a personal connection to the health risks related to this environmental problem.\textsuperscript{168} This personal connection was created by


\textsuperscript{167} Leighton, 115.

\textsuperscript{168} Notwithstanding the president's reputation for being unaware of policy details, it is almost inconceivable that both he and Nancy did not know about the widespread speculation that future ozone depletion might lead to increased cases of skin cancer. In the year preceding the important Cabinet meeting of 1987, news of the ozone hole and its possible effects was circulated widely by the media. Steve Seidel from the EPA stated in an interview that the computer generated colour representation of the ozone hole expanding over time shown repeatedly on nightly newscasts was also shown to "everyone" in government. Although there is no documentation indicating that Reagan saw this vivid image as well, it is quite likely that he did. Interview with Steve Seidel, January 29, 1996, Washington, D.C.

As well, congressional hearings on the effects of ozone depletion were occurring on the Hill. In a speech directed to the president, Senator Chafee urged action on the CFC issue by arguing
the truly vast experience they had with cancer throughout their lives. Ronald Reagan's own experiences with cancer soon became even more intimately linked with the fears circulating about ozone depletion. In 1985 Reagan had two skin cancers removed from his nose and another one operated on in July of 1987. Conscious of the requirements of a healthy lifestyle, the cause of his skin cancer did not escape the president. Almost two years before Reagan was asked to support a strong U.S. leadership role on CFC regulations, he made the following remarks to reporters about his experience with skin cancer: "...it was informed to me it [the spot on his nose] was indeed a basal cell carcinoma. They come from exposure to the sun...". Continuing, Reagan noted,

that ozone depletion would "strike at the very core of everyone's health and environmental well-being." He continued, "Increased skin cancers, suppression of the immune response system, reduced crop yields, and loss of aquatic species are just some of the dangers that lie ahead of us if we fail to act." "Statement of Senator Chafee", Congressional Record. No. 138, - Part II, (October 8, 1989), S15678.

169 In 1983 a non-cancerous polyp was removed from the president's colon and a year later several smaller ones were discovered in his intestine and removed. Then, in July of 1985, while removing another polyp, Reagan's doctors found a large malignant tumour in the same area and it was immediately operated on. Only ten days earlier Reagan's brother Neil had entered the hospital for virtually the same cancer operation as well. Leighton, 316. Over the next three years Reagan would have twelve more polyps removed. Kitty Kelly, Nancy Reagan: The Unauthorized Biography. (New York: Simon and Schuster, 1991), 439.

Nancy Reagan also had personal experience with cancer. During a routine physical examination in October of 1987 a breast lesion was discovered and she opted for a modified radical mastectomy. Smith and Henderson, 110. Touched by the effects of a lifetime of activity in the outdoors, she had a precancerous sun lesion removed from her lip. Smith and Henderson, 125.

I know medicine has been waging a great campaign to try to convince people to stop broiling themselves in the sun because of this very ailment...here I am a veteran all my life - and it took a long time for it to finally have an effect - but for others to give up their dreams of a good tan, because evidently this is what causes it.  

Ronald Reagan also viewed ozone depletion as a threat to the health and safety of people throughout the entire world. After his third surgery for this disease he told a group visiting the White House that they should think of the bandage on his nose as a sign reading "STAY OUT OF THE SUN". His experiences in this regard could not have been more directly related to the issue of ozone depletion and its health effects. In light of the fact that health was a central value of the Reagans' and had directly influenced their behaviour in the past, it seems plausible that concerns about the health risks of ozone depletion factored into the president's decision to support a strong U.S. position in the ongoing international negotiations.

The crucial Cabinet meeting in June of 1987 was the culmination of an interagency process that had been instigated by a number of departments including Commerce, Energy,  

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172 Cagin and Dray, 331.

173 Incredibly, Reagan's brother was later diagnosed with skin cancer on his nose as well. Leighton, 316.
Agriculture, OMB and the Office of Science and Technology Policy. Officials in these departments felt that they had not been appropriately consulted before the EPA and State Department drafted the U.S. negotiating position on CFC controls. As one of several important junctures of U.S. leadership, this meeting witnessed the president adhering to his newly altered value orientation and registering support for the strong negotiating position Thomas and Benedick wished to enter the final stages of the Montreal negotiations with.

Addressing the Senate a few months after international agreement to reduce CFCs was achieved, Reagan stated,

The Montreal Protocol provides for internationally coordinated control of ozone-depleting substances in order to protect public health and the environment from potential adverse effects of depletion of stratospheric ozone.

Normon Vig, in his study of presidential leadership and the environment, notes that some Washington insiders believe that Reagan's support for the Montreal Protocol was, in fact, due to his experiences with skin cancer. Finally, in response to a question about why Reagan supported this leadership role, a mid-level

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174 Cagin and Dray, 321.


official at the EPA provided implicit support for this explanation by speculating that, ". . . Nancy was very concerned about President Reagan's skin cancer."  

Shortly after international agreement on the question of CFC controls was reached in September of 1987, the United States was faced with another opportunity to provide leadership by facilitating the quick implementation of the protocol's provisions. On this occasion Reagan again supported immediate action to protect the ozone layer. During ceremonies that marked the signing of the Montreal Protocol he declared, "Our immediate challenge, having come this far, is to promote prompt ratification by every signatory nation."  

His motivation for pursuing this issue was suggested on this same occasion when he stated, "The protocol speaks an important milestone for the future quality of the global environment and for the health and well-being of all peoples of the world."  

177 Confidential Interview, January 29, 1996, Washington, D.C. Given that Nancy Reagan, according to biographer Kitty Kelly, was terrified enough of radiation therapy to opt for the removal of her breast to treat a small breast lesion (Kelly, 496), concern for her husband would likely have been rooted in news of the thinning ozone layer. A former doctor of Nancy's stated that, "She's got a hang-up about it...she's terrified of radiation."  Apparently these fears extended to Ronald Reagan as well. Kelly, 496.  


IV. Reagan and Public Opinion

Given the widespread public support for CFC controls following the discovery of the ozone hole over Antarctica, it is possible that the president was not convinced by the scientific information and did not undergo a value shift. Rather, he decided to support this politically popular initiative in order to provide support for George Bush's upcoming election bid. The fact that an

Karen Litfin (189) notes that the extensive press coverage of the ozone hole during this period indicates that this issue was at the forefront of public consciousness. A national election study conducted in 1988 revealed that depletion of the ozone layer along with the drug problem were considered the most important election issues by the American public. "American National Election Study - 1988", (Roper Centre for Public Opinion Research, 1998), 2. As well, by 1990, 95 percent of Americans were familiar with the ozone layer issue."Environment: Public Attitudes and Individual Behaviour", (Roper Centre for Public Opinion Research, 1998), 2.

Another possible explanation of Reagan's behaviour on this occasion suggests that he reaffirmed the original U.S. negotiating position of heavy CFC reductions because of a cost/benefit study prepared by his Council of Economic Advisors. Brenda M. Seaver, "Stratospheric Ozone Protection: IR Theory and the Montreal Protocol on Substances that Deplete the Ozone Layer", Environmental Politics, Vol. 6, No. 3, (Autumn, 1997), 53. While this economic analysis certainly would have made a strong position on CFCs more attractive to the president, there is much evidence to suggest that this type of rational cost/benefit calculation was not the only, or even the most important factor involved in his decision making on this day. Politically, Reagan's decision did not make a lot of sense. Much like his efforts to warm relations with the U.S.S.R. and achieve disarmament, his support for the EPA position "confounded his traditional ideological allies." Benedick, 67. To the surprise of many insiders he broke with the wishes of many in his Cabinet on the ozone issue by supporting Thomas. An attempt was even made to conceal this division by deliberately not publicizing the results of the meeting. Benedick, 67.

Reagan also deviated from rational norms of decision making because he ultimately went much further than the latest scientific information suggested was appropriate. Very few scientists at that
environmental group contacted Bush's office prior to this meeting to remind him that this would be one of the only environmental initiatives he could take credit for going into the next election lends support to this type of argument.  

There are a number of reasons however, to question this account of why Reagan supported the EPA proposal. First, Reagan already acknowledged before this meeting that ozone depletion was an environmental problem that required action. Commenting on the recent signing of the Vienna Convention in 1985 the president stated that, "this agreement protects the environment and public health from the potential adverse effects of depletion of stratospheric ozone." Moreover, if indeed Reagan responded to public opinion in this case it would have been one of the only times this administration was pushed by such considerations to clean up the environment. Reagan's assault on the environment in the face of public opposition was so persistent that environmental groups expressed some relief in 1985 when the stalemate in Congress time were calling for a virtual phase-out of CFCs. Skjaerseth, 295. Finally, in supporting EPA's efforts to create a new international ozone regime, Reagan went against his previously hostile approach to international institutions and, particularly, the United Nations. It is clear that Reagan's decision in June of 1987 involved both rational considerations and nonrational elements derived from his value orientation.

182 Roan, 200.

meant future inaction on these issues.\textsuperscript{184} Kenski's statement that "...the Reagan administration consistently misread or minimized the public opinion record supporting tough environmental protection..."\textsuperscript{185} accurately describes the entire duration this administration was in office.

Reagan's past electoral experience also seemed to suggest that he could maintain politically unpopular positions on social issues such as environmental protection without feeling repercussions at the polls. In 1980, and again in 1984, social issues were a strong predictor of the vote for people with fundamentalist beliefs but much less so for more secular parts of the electorate. Reagan therefore did not lose the support of individuals with secular beliefs that disagreed with his social (environmental) policies while he maintained electoral support from fundamentalist groups.\textsuperscript{186} As such, his previous electoral experience did not give him any reason to be concerned that George Bush and the Republican Party might suffer in the upcoming elections if they failed to act on CFC controls.

It is however possible that Vice-President Bush and James A. 


\textsuperscript{185} Henry C. Kenski, "The President, Congress, and Interest Groups: Environmental Policy in the 97th Congress", in Helen M. Ingram and R. Kenneth Godwin, eds., \textit{Public Policy and the Natural Environment.} (Greenwich: Jai Press Inc., 1985), 82.

Baker III (treasury secretary)\textsuperscript{187} were more concerned about the electoral implications of this decision and therefore were instrumental in getting Reagan to agree to the strict program of CFC regulation advocated by the EPA. A close examination of Bush's 1988 presidential campaign reveals that this explanation is also not plausible. It was not until late in the summer of 1988, long after the Cabinet meeting on ozone layer depletion, that Bush finally "broke with Reagan" and introduced to the public a number of programs in the environment, education and general welfare areas.\textsuperscript{188} Over the span of six weeks Bush unveiled proposals to ban ocean dumping of medical wastes, halt destruction of the nation's wetlands, end contamination of the country's groundwater and reduce acid rain.\textsuperscript{189} Had the Bush-Baker team been so concerned about the public's perception of his environmental record it is unlikely that they would have waited until well into the campaign to change direction so radically and distance the Bush program from the policies of Ronald Reagan. As a final note it is worthwhile to question whether a shift in public opinion that likely occurred shortly after May of 1985 could have had such a major influence on Reagan and Bush almost two years later at this meeting. Even with

\textsuperscript{187} James Baker managed a number of George Bush's election campaigns including his unsuccessful bid for a U.S. Senate seat in 1970, his attempt to capture the Republican presidential nomination in 1980 and his successful bid for the presidency in 1988.


\textsuperscript{189} Duffy and Goodgame, 28.
the upcoming presidential election this account of the events is not compelling. Rather, it is more plausible to suggest that Reagan, like other administration officials, was swayed by newly evoked shallow ecology values that influenced his final decision.

X. Conclusion

In contrast to the acid rain case, there is much evidence to suggest that on ozone depletion a number of officials, both inside and outside of the Reagan administration, approached policy making from beyond the bounds of the frontier ethic. Given impetus by a changing worldview, and especially a dramatic event in the guise of the ozone hole discovery in 1985, key officials in government and industry became as concerned with shallow ecology values as with economic efficiency, freedom, individualism, technology, progress, and materialism. The health of people alive today and the well-being of future generations became the predominant concerns of policy makers amid growing fears of irreversible damage to the earth's fragile ozone layer. Indirect evidence suggests that President Reagan was influenced by his personal experiences with the health risks (skin cancer) associated with ozone depletion. This played an important part, in conjunction with industry support for CFC controls, in his decision to support the leadership role taken by other administration officials on this issue.

In addition, the lower level of political conflict associated with CFC controls and the recent value shift in decision makers made administration officials more open to new scientific knowledge
about ozone layer depletion. Policy makers became much more willing to act on the new information about CFC emissions available to them, even if it was still controversial in the scientific community.

The important absence of some type of critical moment in the acid rain case that might have elicited environmental values in key decision makers meant that government officials in Washington, and the corporate elite in the SO₂ emitting industries, were not induced to take a leadership role and support the regulation of SO₂. The fact that acid rain was never viewed as a serious health threat, but rather as a reversible phenomenon, only heightened the resolve of SO₂ producers to resist controls of these chemicals. Moreover, without the urgency of an environmentally related health crisis driving them to action, officials in the Reagan administration were much more receptive to interest group lobbying by electric utilities and coal producers who opposed U.S. leadership on acid rain controls.
Conclusion

With increasing regularity environmental issues are commanding greater attention from the world's decision makers. Apart from the fact that the number and scope of transborder environmental issues have increased, a new type of environmental problem has emerged. As Hurrell and Kingsbury argue,

...humanity is now faced by a range of environmental problems that are global in the strong sense that they affect everyone and can only be effectively managed on the basis of cooperation between all...

The international community is beginning to realize that shared or common global resources are being destroyed by human activity. Climate change, the loss of biodiversity, deterioration of special regions such as Antarctica and the Amazon, ozone depletion and pollution of the sea-bed have recently been identified as the most serious environmental problems facing the world community. Dominated by sovereign states and weak international institutions, the international community has looked to the United States for leadership to create the regulatory regimes required to address these problems.

The signing of the Montreal Protocol in 1987 was heralded at the time as ushering in a new era of international cooperation on

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environmental issues.\textsuperscript{2} Led by the United States, the international community took action to protect the ozone layer from future damage wrought by the emission of CFCs. However, the Reagan administration, during the 1980s, refused to push for the creation of an international or bilateral regime aimed at controlling acid rain. In fact, the United States actively resisted the efforts by Canada and other countries to gain its support in efforts to find a solution to this environmental problem. The dissertation attempted to explain, from a decision making perspective, why the Reagan administration pursued international CFC controls with such vigour after 1985 but declined to take a leadership role in efforts to deal with acid rain.

As Chapter One noted, existing explanations of Reagan's environmental diplomacy do not offer complete accounts of why this administration responded to concerns about ozone layer depletion and acid rain deposition in such different ways. These approaches span different levels of analysis\textsuperscript{3} and focus on the international system or place primacy on domestic political processes. We argued here that the failure of these explanations indicated a need to examine the role that ideas, interests and values played in the


policy formation process in each case of environmental policy making.

I. Environmental Leadership

In Chapter Two this investigation began by examining the historical record to demonstrate that the United States did eventually provide international leadership during the CFC negotiations but played little positive role in the acid rain talks. It was argued that in contrast to the Carter administration, Ronald Reagan displayed a lack of policy, intellectual and structural leadership on both of these issues upon coming to power in 1981. However, by 1985 this administration was taking more of a leadership role in the CFC negotiations. Ultimately, the United States was instrumental in forging international agreement on the need to create a CFC regime. The Montreal Protocol was signed in September of 1987.

a. Acid Rain

Shortly after coming to the White House in 1981, president-elect Reagan promised to honour the Memorandum of Intent previously signed with Canada to address acid rain. Nevertheless, this administration proceeded to undermine any measures taken by Canadian or American supporters of acid rain controls to find a collaborative solution to this ecological problem. By appointing anti-environmental zealots such as Anne Burford and James Watt to
the top posts in the Department of the Interior and at the EPA, Reagan effectively halted any policy or intellectual leadership that had, in the past, characterized this country's approach to this issue. Intellectual leadership, in particular, was forfeited when administration officials began to cripple the scientific enterprise associated with acid rain research by cutting off funds for important projects, interfering with the collection, review, distribution and debate of information and even firing scientists that called for SO$_2$ regulation.$^4$ Policy leadership suffered early on when this administration made deep cuts to the EPA's budget and then drafted, or supported, a number of amendments to the Clean Air Act that would have significantly increased the amount of air pollutants, including SO$_2$ and NO$_x$, released into the atmosphere each year.$^5$

The glimmer of hope provided to supporters of SO$_2$ regulation with the arrival of William Ruckelshaus as new EPA administrator quickly faded when Cabinet officials rejected his 1983 proposal for a modest acid rain program. Acceptance by the Reagan administration of the recommendations in the Special Envoys' Report

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of 1986 also failed to rekindle the long dormant U.S. intellectual leadership on this environmental problem. Because the United States did not follow through with the terms of this agreement Canada became so disenchanted that it began renewing its demand for a 50 percent reduction in acid rain causing emissions by its southern neighbour.  

Reagan repeatedly failed to provide policy leadership by not setting the environmental agenda in his discussions with other leaders. Most often it was the U.S. president who responded to initiatives taken by others on this issue. During Reagan's visit to Ottawa in 1981, and again during the June 1984 Economic Summit in London, it was the Canadian Prime Minister Pierre Trudeau who pushed to make acid rain a priority for future policy making.  

Moreover, the United States and Britain were only major western industrialized countries not to sign the Protocol to the Convention on Long Range Transboundary Air Pollution in September of 1985 that controlled acid rain emissions. In the final year of Reagan's presidency he was still promising Canadian officials to consider a

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8 Park, 1987, 189.
bilateral acid rain treaty, the same commitment he made shortly after coming to power in 1981. In sum, evidence provided in Chapter Two suggested that, according to almost every measure, the United States never took a leadership role in the international and bilateral efforts to achieve interstate cooperation on the acid rain issue.

b. Ozone Layer Depletion

The Reagan administration was at first quite slow to move on concerns that CFCs released into the atmosphere were breaking down the ozone layer. Indeed, the EPA under administrator Anne Burford effectively ignored regulation of these chemicals at the domestic level for close to three years by disregarding the requirements of the ANPR issued in 1980, and by refusing to make any official statements on its ozone policy during this time. However, the United States gradually reversed its position on CFC controls and by 1985/1986 it was guiding the formation of CFC regulatory policy by providing intellectual, policy and structural leadership to the international community.

The move toward greater U.S. involvement on this issue began in September 1983 when this country reversed its position and indicated its support for the first part of the Nordic Annex

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proposal. Policy leadership was taken by the United States when it began setting the international agenda to address this environmental problem. It rejected a call in 1984 by some European countries to delay CFC controls for a number of years\(^\text{10}\) and it introduced a last minute resolution in Vienna in 1985 calling for renewed negotiations to achieve mandatory CFC reductions by 1987.\(^\text{11}\)

As well, the United States successfully gained some followers in the international community in December of 1986 when it surprised many by proposing a virtual phase-out of CFCs over the next decade.\(^\text{12}\) The fact that the president himself gave his full support for this strong negotiating position at a key cabinet meeting in June of 1987,\(^\text{13}\) and pushed for discussions about ozone depletion at the Venice Economic Summit in the same month,\(^\text{14}\) had a similar effect on the international negotiations.

Policy leadership was supported with intellectual and structural leadership throughout the years that the United States was actively seeking international regulation of ozone depleting substances. In addition to organizing much of the scientific research into the causes and effects of ozone layer depletion, U.S. proposals were made to the international community.

\(^{10}\) "Confidential Reporting Cable", Department of State, (no date).

\(^{11}\) Benedick, 45.


\(^{13}\) Benedick, 67.

\(^{14}\) Benedick, 57.
scientists and policy makers attempted on several occasions to gain acceptance for their ideas among important members of the international community. Negotiators and scientists from the United States travelled to India, Egypt, Australia, Belgium, Germany and Japan to increase understanding of this environmental problem.\textsuperscript{15}

Important decision making junctures in the final stages of the negotiations leading up to the Montreal Protocol involved the use of U.S. structural leadership to ensure that a treaty would be signed. American negotiators made full use of threats emanating from Congress in 1986 to restrict the access of CFC-based products to the U.S. market as part of the strategy to have their negotiating position accepted.\textsuperscript{16} As well, the United States persuaded many developing countries to support the Montreal Protocol document by using the promise to share new CFC replacement technologies as bargaining leverage during the talks. In keeping with the great importance the United States accorded this issue, and the leadership efforts it took to conclude an agreement, this country signed the Montreal Protocol in September of 1987 and, less than a year later, was the first major country to ratify it.

Along a number of dimensions then, the policy response of the

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Reagan administration to concerns over the health of the ozone layer differed dramatically from that associated with the problem of acid rain deposition. Chapter One revealed that the great divergence in the policy responses to these two environmental problems by the Reagan administration is not well explained by many of the prevailing domestic level or structural theories of International Relations. As such, the analysis of Reagan's environmental policy in this study combined interest group theory, as one possible account of the events, with less common approaches including a focus on the ideas and values of decision makers.

II. Epistemic Community Theory

Chapter Three demonstrated that epistemic community theory is not helpful in showing why the Reagan administration provided leadership in the international efforts to address ozone depletion but not in attempts to create an acid rain regime. In the case of ozone depletion there is little evidence that an epistemic community, even loosely defined, ever existed. Many of the most active scientists studying ozone layer processes lacked the institutional affiliations and qualifications required to possess an authoritative claim to this knowledge; attributes that are essential for group membership. More importantly, the glue that binds an epistemic community together - a shared knowledge of causality - was also lacking on this issue. Scientific consensus about the causes of ozone depletion did not exist until the Ozone
Trends Panel was released in 1988, sometime after the Montreal Protocol was signed. Finally, even if an epistemic community of sorts did exist, the fact that very few, if any, atmospheric scientists made specific policy recommendations concerning ozone depletion suggests that they were not a critical factor that shaped this policy process.\footnote{Karen Litfin, Ozone Discourses: Science and Politics in Global Environmental Cooperation. (New York: Columbia University Press, 1994), 187.} For all of these reasons the proposition that U.S. leadership in the development of a CFC regime was the result of epistemic community activity was rejected in Chapter Three.

In contrast, an examination of the events surrounding the acid rain discussions revealed that an epistemic community did exist in this case. However, all efforts by this group of professionals to employ the existing scientific consensus on the causes and effects of acid rain to shape, or initiate, the formulation of regulatory legislation were rejected quite forcefully by the Reagan administration. Reagan's record on acid rain clearly demonstrates that the efforts of this group of knowledgeable experts were in vain. The possibility that another epistemic community calling for a "go slow" approach to this environmental problem was responsible for the resolve of this administration to refrain from taking a leadership role was also found to be untenable. Indeed, there is little historical evidence to indicate that such an anti-regulation community of experts ever existed on this issue. More importantly,
many senior administration officials, including Reagan himself, eventually rejected the proposition that acid rain did not exist and eventually acknowledged that it was a serious problem that had to be dealt with. The Reagan administration clearly did not refuse to introduce S\(_2\)O\(_3\) controls for so long because of the new ideas presented by an anti-regulation group of scientists. Rather, other forces were at work that convinced government policy makers that action to limit acid rain deposition was not appropriate.

While epistemic community theory was unable to explain the divergence in how the United States responded to these two cases, this analysis did reveal that scientific ideas were very important in the evolution of efforts to create a regime to regulate CFC production and consumption. Government decision makers almost always justified their action or inaction in this case on the latest scientific findings. Indeed, the prevailing scientific understanding of ozone depletion processes was incorporated into the final regulatory framework adopted in Montreal in 1987. Chapter Three therefore provided impetus for this researcher to broaden the focus on ideas and information and investigate the way they may have interacted with other variables such as interest group pressure or individual values to affect government decision making.

### III. Interest Group Pressure

Chapter Four examined the events constituting the Reagan
administration's response to the acid rain and ozone layer environmental problems and showed that interest groups successfully moved the administration to take a leadership role in one case and not in the other. Important differences in the policy networks that formed around these two issues were found to have affected the ability of social groups to shape the policy making process and the capacity of state actors to independently direct policy. In the acid rain case very powerful but specialized industry groups, constituting a weakly developed associational system, resisted SO₂ and NOₓ controls for the entire time that Reagan was president. Even though the state generally has greater latitude to control the policy agenda in the face of pluralist networks, the diverse nature and great power resources of the associational system opposing SO₂ regulation effectively decreased the ability of decision makers to affect public policy change on this issue. Those officials that argued for action on acid rain, such as EPA head William Ruckelshaus, simply could not overcome the enormous political pressure from a powerful, but specialized, anti-regulation associational system. A congruence of values among industry leaders, and officials within the administration that did not support acid rain regulation, had a similar effect. Ultimately, intense lobbying by automakers, utilities, miners and low and high sulphur coal producers overshadowed the much less influential pro-regulation environmental community and effectively halted the introduction of legislation to address acid rain.
The policy network that formed around the ozone depletion issue differed from the acid rain one in significant ways. In particular, the anti-regulation associational system working to prevent the introduction of CFC controls was united by a few dominant autonomous associations able to integrate complex scientific information. The Alliance for a Responsible CFC Policy, and to a lesser extent DuPont, ensured that this system was strongly developed and therefore retained an "insider" role in policy discussions. The existence of a scientifically oriented CFC industry, directed by a few very large members sharing common interests, encouraged the development of a highly integrated policy network characterized by strong links between government and business. As such, the capacity of the state was increased and the Reagan administration was better able to interact constructively with business interests during the policy process and take a leadership role on this issue.

Also important was the fact that the CFC industry eventually came out in support of regulating these chemicals. A major obstacle facing administration officials working to create an international ozone layer regime was thus removed. As well, after the discovery of the Antarctic ozone hole in May of 1985, a number of governmental decision makers and industry representatives began to share some of the values held by environmentalists18 and, therefore, became more open to the notion that CFC regulation was

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18 See Chapter Five.
necessary.

Joining the now cooperative business coalition was an influential environmental community that, in contrast to the acid rain case, had a great deal of success in keeping the Reagan administration moving towards some form of CFC regulation. The NRDC was especially influential because of the lawsuit it brought against the EPA in November of 1984 which helped reinvigorate administration efforts to foster international cooperation on this issue. It also became clear as Reagan was completing his second term as president that there was strong bipartisan support in Congress for efforts to protect the ozone layer. This support was noticeably absent in the case of acid rain controls as a stalemate reigned on Capital Hill over this issue for most of the 1980s.

The examination of important societal groups in Chapter Four also revealed how the reception of new scientific ideas by important state actors was influenced by the "politics" surrounding these two cases. In particular, the degree of political conflict, associated with interest group and congressional activity, determined the level of scientific consensus decision makers required before they would take action on these environmental problems. As the political conflict intensified, as it did over acid rain regulation, Reagan administration officials demanded an impossibly high level of scientific consensus on the association, mechanism and ecological effects related to this phenomenon.  

19 For a discussion about the different levels of scientific consensus see Chapter Four.
before imposing regulations on industry. In contrast, there was less political opposition to CFC regulation in the United States because industry eventually registered its support for regulation and because there was no regional dimension to this environmental problem. The more favourable "politics" surrounding the ozone layer discussions made some administration officials, including President Reagan himself, more open to scientific information indicating the need for immediate action to control CFCs. This occurred in spite of the fact that there was no scientific consensus in the research community around the understanding of ozone depletion processes until after the Montreal Protocol was signed in 1987.

IV. Value Orientation

New ideas and information were also very important in shaping the way the value orientations of decision makers, inside and outside of government, influenced their approach to the acid rain and ozone layer depletion problems. It was argued in Chapter Five that the values and beliefs that underpinned the Reagan administration's response to acid rain deposition and ozone depletion were quite similar during the early years of this administration. Top officials in the EPA, the Office of Management and Budget (OMB) and Department of Interior approached both of these issues with a desire to limit government regulation in an attempt to increase economic freedom and thereby strengthen
economic growth. Considerably less value was placed on the protection of the environment and human health, either as ends in themselves, or as a means to sustain the well-being of the American people. The administration also demonstrated at this time greater concern for the effect of environmental policies on the performance of the economy than on the survival of future generations.

Similarly, the CFC industry and the emitters of acid rain causing chemicals differed from environmental groups in the early 1980s in that they placed much greater emphasis on the continuance of their own economic growth than on protection of the environment. Fearing the economic consequences of government regulation, the health effects of existing corporate policies on people living in the present and in the distant future were disregarded, as was recognition of the natural environment's fragility and susceptibility to harm from human activity.

However, the historical record revealed that shortly after 1985 the value orientations of key officials in the Reagan administration, and in the CFC industry, began to shift so that regulation of ozone depleting chemicals became possible and, indeed, an important policy goal. The critical event responsible for this shift in values was the new information released in May of 1985 indicating that a large reduction in the ozone layer had occurred over Antarctica. For mid-level officials in the EPA who were previously quite concerned about the CFC threat and taking action to address it, the idea that an "ozone hole" had recently
formed in the stratosphere increased the intensity of the values driving them to action. They therefore became more motivated to resolve this environmental problem by creating an international ozone layer regime.

The news of the ozone hole had an even more dramatic effect on officials inside the Reagan administration and within industry who had previously been guided by the frontier ethic and had thus resisted the regulation of CFCs for so long. Many of these people, including President Reagan, were greatly affected by the serious health threat the ozone hole seemed to pose (especially in the form of skin cancer) and by the widespread perception that this was an irreversible phenomenon. They therefore began to value human health and preservation of at least this part of the natural ecosystem as much, or more than the health and well-being of the CFC industry and the nation's economy. This value shift altered the preferences of Reagan and others in such a way that at important junctures in the policy process they registered their support for government action to limit CFC emissions and consumption.

There was a notable absence of new ideas or information constituting some type of critical event in the acid rain case that might have elicited environmental values in key decision makers. This meant that government officials in Washington, and the corporate elite in the SO₂ and NOₓ emitting industries, were not induced to take a leadership role and support the regulation of
acid rain causing chemicals. Because acid deposition was never viewed as a serious health threat, but rather as a reversible occurrence, the resolve of $\text{SO}_2$ and NO$_x$ producers to resist controls of these chemicals was never challenged. Lacking the urgency of an environmentally related health crisis to drive them to action, administration officials remained receptive to lobbying by the electric utilities, automobile makers and coal producers who opposed U.S. leadership on the acid rain issue.

This examination of the Reagan administration's approach to these two environmental problems revealed that ideas, values and societal interests may shape foreign policy decision making in many important ways. Because the effects of these variables on decision making may be as subtle as enhancing a leader's predisposition to view the world in a certain way, or as dramatic as a sudden value shift due to the scientific discovery that the earth is in grave danger, significant methodological challenges face the researcher in trying to understand the extent and nature of the important variables involved. Since, "environmental-social systems...are characterized by multiple causes and effects and by a host of intervening variables, often linked by interactive, synergistic, and nonlinear causal relations",\textsuperscript{20} the manner in which values, ideas and societal interests influence policy making is multifaceted and very complex. The remainder of this chapter highlights

some of the more significant aspects of the relationship between ideas, values and societal interests as they relate to environmental policy making. I then locate this discussion among similar recent theoretical developments in the International Relations field and conclude by commenting on the need for, and prospects of, future research endeavours.

V. Ideas, Values and Societal Interests

In the context of International Relations theory, the need to follow a unique approach to the study of environmental diplomacy is suggested by several considerations. In particular, interstate relations in the environmental issue area are often characterized by the involvement of numerous nongovernmental groups, a large degree of uncertainty around the nature of the ecological concern being addressed and a central importance of scientific and technical information.\(^{21}\) Grasping the way that scientific knowledge, domestic political interests and values impact upon decision making is therefore critical for understanding how states respond to environmental problems in the international political system. Ideas, societal interests and values do not often affect the policy making process separately as unidimensional vectors.\(^{22}\) Rather, they usually relate to each other and to the decision

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\(^{22}\) Litfin, 184.
making process in an interactive way, intimately linked by continuous feed-back mechanisms. A brief review of the CFC and acid rain cases illustrates the complexity of these processes.

a. Ozone Layer Depletion

Chapter Five revealed that a shift in values was important in motivating U.S. decision makers to chart a course of international leadership in efforts to create a CFC regime. New ideas had their most profound effect on the ozone layer negotiations by constituting a critical event in the guise of the "ozone hole" discovery. This critical event was a necessary, but not sufficient condition for the observed behaviour by Reagan on this issue. This discovery affected policy making by producing a shift in values. Interest group politics however, had a direct impact on the way the Reagan administration responded to the CFC issue. There is ample evidence to suggest that the lawsuit brought against the EPA by the NRDC in 1984, and the decision by the CFC industry to support international negotiations, were important factors in pushing the administration forward to take the lead on this environmental problem. The NRDC lawsuit was more pivotal in this regard because government officials were well on their way to international leadership before DuPont and the Alliance made their announcements. Nevertheless, industry support was important at the cabinet meeting in June of 1987 where U.S. leadership came close to being scuttled.

The results of this study are limited in that it is not
possible to determine the relative weight to accord to interest group pressure and the value shift of administration officials during important decision making junctures leading up to the Montreal Protocol. There is much evidence suggesting that both influenced the course of events surrounding the ozone layer debate. However, the historical record is less helpful in indicating which variable was most important and why.

Interest group pressure also had an indirect effect on the ozone layer policy process. Admittedly, much like the values explanation, there is more circumstantial than direct evidence to support this assertion. Yet it is quite evident that the favourable politics that eventually came to characterize the debate over CFC controls increased the receptivity of Reagan administration officials to new scientific information indicating that the ozone layer was being damaged by CFC emissions and needed to be protected. This explains why the United States pursued CFC regulation but not acid rain controls in spite of the fact that there was much greater scientific consensus on the causes and effects of acid rain than there was on ozone depletion. Again, this analysis was not able to determine with much precision whether the ozone hole discovery that produced the value shift was more important than the more favourable domestic political climate that made decision makers more open to information indicating that CFC regulation was required. Indeed, it is quite possible that these variables were linked in an interactive, rather than additive way.
Policy makers within this administration may have undergone the value shift because they became more receptive to news about the ozone hole due to the waning interest group opposition. It is here that the complexity of this case overshadows the evidential and theoretical tools available to this researcher.

b. Acid Rain

Interest group pressure from the electric utilities, coal producers, miners and automobile makers was the primary reason the United States did not show international leadership and advocate acid rain reductions. As such, interest group lobbying had a direct effect on the Reagan administration in this case. However, as noted above, the enormous political conflict that characterized the acid rain debate stemming from interest group pressure, as well as a divided Congress, decreased the openness of administration officials to new scientific information showing that SO₂ and NOₓ emissions cause acid rain and damages the ecosystems in Canada and the United States. In this instance domestic political interests affected the policy process indirectly by lowering the receptivity of important decision makers to new scientific information. Again, this may account for why the United States pursued CFC controls but not acid rain regulation even though much more was known about how acid rain was caused and damaged the environment. Finally, in contrast to the ozone layer case, there was little evidence of any shift in values occurring and there was no identifiable critical
event that might have created such a shift.

VI. International Relations Theory

The major argument of this dissertation is that scientific ideas, values of key decision makers and societal interests played pivotal roles in shaping the way the Reagan administration responded to fears about acid rain deposition and CFC emissions. These findings support recent efforts by scholars to move away from structural theories of international politics and gain greater understanding of the domestic level political processes that direct interstate behaviour. The inability of realist theory to adequately account for much of what constitutes the relations among states has been commented on in earlier chapters and by numerous other scholars elsewhere. Realism's emphasis on the centrality of the state, its inability to explain cooperation in the international political system and its failure to examine domestic level political processes makes it especially unsuited for explaining environmental diplomacy. Rather, greater attention to the processes that shape the nature and constitution of state interests, including the motivations of individual actors, is

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required.

a. Ideas

In the past theories of the state developed in response to perceived weaknesses with pluralist explanations of policy making. However, efforts to "bring the state back in", as Peter Hall suggests, have met with limited success in the face of underspecified and inchoate concepts such as the "national interest" or "bureaucratic politics". In an effort to remove the veil of ignorance that continues to surround the workings of the state, alternative conceptions of the policy making process have been posited. In particular, greater emphasis has been placed on the role that ideas and social learning play in shaping the motivations of decision makers.

The findings of this dissertation lend support to the relatively new focus on how ideas affect decision making within states. However, this study finds fault with various theoretical approaches, including epistemic community theory, that envisage the purveyors of new knowledge and information as causal independent agents of change. Whether discussing the policy influence of "epistemic community members", "knowledge-based networks of


26 Peter M. Haas, "Banning Chlorofluorocarbons: Epistemic Community Efforts to Protect Stratospheric Ozone", International
specialists", "knowledge brokers", "policy entrepreneurs", "cultural entrepreneurs" there is often too little attention given in the literature to the contextual factors that permit or encourage the use of specific ideas in decision making. Ironically, in this study, investigation of policy making within the state has come full circle to the point where we are now forced to recognize that pluralist forces such as interest group lobbying can intimately affect the process by which new information and knowledge act upon the decision maker. Indeed, as the acid rain case illustrates, domestic political conflict may negate the impact of new ideas on government officials in many different ways. Most importantly, in the context of environmental issues, political controversy can affect the openness of government leaders to new information. And, as discussion of the Riordan Spectrum Organization. 46: (Winter, 1992), 187.


28 Litfin, 81.


31 Jeff Checkel and Karen Litfin do discuss the importance of some of these variables in their analysis of how ideas can intervene in the policy process.

32 Hall, 1992, 276.
indicated, such conflict can generate increased informational demands that state actors require to be met before basing policy on new scientific ideas. As such, the analysis of new ideas and information in these two cases of atmospheric pollution concurs with the findings of Judith Goldstein, Janice Stein, Karen Litfin and others who highlight the limitations of knowledge-based approaches while investigating some of the more promising avenues of inquiry.\footnote{Janice Gross Stein, "Ideas, even good ideas, are not enough: changing Canada's foreign and defence policies", \textit{International Journal}. 50, (Winter, 1994-5). Litfin, 1994. Judith Goldstein, \textit{Ideas, Interests and American Trade Policy}. (Ithaca: Cornell University Press, 1993). While acknowledging the importance of including some notion of interests in any ideas approach, Judith Goldstein leaves many of the details about the link between ideas and interests underspecified.} Future research into the effect of ideas on decision making within the state must therefore explore more closely the important factors that condition the influence that they ultimately have in this regard.

b. Values

This investigation of environmental policy making by the Reagan administration argued that the discovery of the "ozone hole" over the Antarctic in 1985 created a shift in the value orientations of key government officials motivating them to provide international leadership in the efforts to create a CFC regime. While there was much evidence indicating that values played a key role in these cases, some of the important dynamics that define the relationship between value orientation and individual behaviour...
were, of necessity, left underspecified. For example, it is not clearly understood why the value shift that contributed to Ronald Reagan's decision to support deep CFC cuts during the Montreal Protocol negotiations did not also affect his approach towards the acid rain issue. It is possible that this reorientation of values was issue specific and only temporarily evoked by the symbolism of the earth in peril due to a depleting ozone layer. But it is also possible that the intense domestic political conflict that surrounded the debate over SO₂ controls effectively prevented the application of shallow ecology values by the president to the acid rain issue. Indeed, there were sporadic scientific reports indicating a serious health threat from acid rain during the 1980s.³⁴

Similarly, it is also not clear why the value shift that was at least partially responsible for the decision by DuPont in 1986 to publicly support limits on CFC production did not also intervene and influence the position that its subsidiary, the Consolidation Coal Company, took on acid rain regulation. This company, the nation's second largest coal producer, never came out in support of action to curb acid rain and, as Chapter Four demonstrated, was instrumental in keeping the administration from imposing expensive pollution controls on industry. Again, there are a number of possible explanations for this apparent puzzle in the values

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³⁴ An EPA study in 1981 focusing on benefits of regulation argued that action to control acid rain could prevent up to 54000 deaths. Park, 201.
explanation.

Of considerable importance is the fact that the size of this study and the resources available to this researcher simply did not permit the scope of analysis that would have afforded a better understanding of internal policy making at DuPont. However, part of the reason why such questions remain prevalent is the almost total absence, in the International Relations field, of any theoretical approaches utilizing the role of values for understanding interstate behaviour. The lack of any type of international moral theory forced this researcher to borrow analytical models from other areas of study including environmental ethics, environmental psychology, social-psychology and sociology. While cross-discipline research initiatives provide fertile ground for progress in understanding these types of issues the historical reluctance of political science scholars to incorporate the study of values into their respective areas of study persists to this day.

Within International Relations literature the concept of normative values has been criticized on the ground that values are not directly observable and, as such, this concept is difficult to define and operationalize.\(^{35}\) In addition, normative concerns, it is argued, provide poor predictions of human behaviour. Hans Morgenthau, focusing on research into interstate behaviour,

highlights one of the most serious criticisms of this concept. He suggests that trying to understand foreign policy exclusively in the motives of statesmen is futile because,

...motives are the most illusive of psychological data, distorted as they are, frequently beyond recognition by the interests and emotions of actor and observer alike. Do we really know what our motives are? And what do we know of the motives of others?36

However persuasive these criticisms may sound there are reasons to discount them and suggest that the concept of values may contribute to productive social science research. First, the importance of these reservations is questionable because there are similar difficulties in defining some of the competing concepts such as cognition and rationality.37 As well, while using moral values in one's research would make for less powerful and parsimonious theories it would allow the researcher to avoid basing entire theoretical approaches on unrealistic core assumptions. For example, it simply is not the case that people strive only to maximize utility or that leaders always seek power. Finally, these criticisms have their origins in the historical tendency in political science to accept only those theoretical formulations that promise progress through prediction, generalization, parsimony and a strict adherence to the scientific method.38 Once this


38 Hoffman, 45.
desire to find a kind of "masterkey" is overcome and we fully accept Raymond Aron's contention that a theory of undetermined behaviour "can do little more than define the basic concepts, analyze basic configurations, sketch out the permanent features of a constant logic of behaviour...(and) make the field intelligible" these criticisms lose much of their force.39 The study of values once more becomes a worthwhile endeavour.

VII. Future Research

As the demand for international leadership to address a growing number of global environmental problems increases, the need for the type of research conducted in this dissertation will also grow. Given the special character of environmental issues in the international political system, a unique approach to these problems that links ideas, interests and values will be required to fully understand them. The theoretical literature on the Montreal Protocol negotiations has largely ignored the domestic determinants of the ozone regime created in 1987.40 It is hoped that this study, along with others to follow, will provide enough of an understanding of how societal forces shaped the ozone layer debate to eliminate this gap in the literature. More importantly, this focus on the acid rain and ozone layer cases provides an excellent

39 Raymond Aron as paraphrased by Stanley Hoffman, 52.

starting point for an investigation into possibly the most important environmental issue on the international political agenda—climate change. The history of this environmental problem suggests that ideas, interests and values are sure to be important factors in shaping the way this issue develops in the future. As well, the fact that CFCs and nitrogen oxides are major greenhouse gases provides another possibly important policy link between these issues. Given the current attention on the problem of climate change through scientific, public and governmental policy discussions, and the fact that the global ozone layer regime has been held up as a prototype for a future climate change agreements, the need and opportunities for more research in this area are great.


42 Litfin, 191.
Appendix A
List of Interviews

(former director of NOAA Aeronomy Lab and cochair at United Nations  
for scientific assessments).

(former economist with the EPA).

(staff attorney with NRDC).

(executive director, State and Territorial Program of Air  
Administrators).

(director, Science and Policy Associates, former director of  
NAPAP).

Brydges, Tom. December 12, 1995, Toronto, Ontario  
(former scientist with Ministry of the Environment, Toronto,  
Ontario).

(Department of Natural Resources, University of New Hampshire).

(World Resources Institute).

(executive director, Alliance for a Responsible CFC Policy, former  
lobbyist for the low sulphur coal industry during the 1980s).

Glas, Joseph P. January 26, 1996, Wilmington, Delaware  
(former director of the Freon Products Division, DuPont).

Gotlieb, Allan. December 11, 1995, Toronto, Ontario  
(former ambassador to the United States).

(senior official with the NRDC).

(director, Global Change Division, EPA, former head of the EPA's  
Stratospheric Ozone Task Force).

(U.S. acid rain scientist, Forestry Services - Forestry Sciences  
Lab).


Miller, Alan. January 26, 1996, College Park, Maryland (Centre for Global Change, former staff attorney for NRDC and World Resources Institute).

Miller, Robert. January 4, 1996, Lansing, Michigan (Michigan Department of Environmental Quality - Surface Water Quality Division, former director of Michigan Air Pollution Control program and former director of STAPPA).


Steed, Joe. January 10, 1996, Willmington, Delaware (Marketing - Pigments Division at DuPont, former director of Freon Division at DuPont).


### Appendix B

#### Interview Schedule

<table>
<thead>
<tr>
<th>Name</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tom Brydges</td>
<td>December 11, 1995 (telephone) 3:00pm</td>
</tr>
<tr>
<td>Allan Gotlieb</td>
<td>December 12, 1995 (11:00am)</td>
</tr>
<tr>
<td>James Hornbeck</td>
<td>January 2, 1996 (10:00am)</td>
</tr>
<tr>
<td>John Carroll</td>
<td>January 3, 1996 (telephone) 7:00pm</td>
</tr>
<tr>
<td>Robert Miller</td>
<td>January 4, 1996 (10:00am)</td>
</tr>
<tr>
<td>Joseph Steed</td>
<td>January 10, 1996 (4:00pm)</td>
</tr>
<tr>
<td>Liz Cook</td>
<td>January 11, 1996 (11:00am)</td>
</tr>
<tr>
<td>Daniel Albritton</td>
<td>January 11, 1996 (telephone) 3:30pm</td>
</tr>
<tr>
<td>Gene Likens</td>
<td>January 12, 1996 (telephone) 11:00am</td>
</tr>
<tr>
<td>Courtney Riordan</td>
<td>January 16, 1996 (10:00am)</td>
</tr>
<tr>
<td>Kevin Fay</td>
<td>January 18, 1996 (11:00am)</td>
</tr>
<tr>
<td>David Stirpe</td>
<td>January 18, 1996 (11:00am)</td>
</tr>
<tr>
<td>Stephen O. Anderson</td>
<td>January 19, 1996 (9:00am)</td>
</tr>
<tr>
<td>John Hoffman</td>
<td>January 22, 1996 (10:00am)</td>
</tr>
</tbody>
</table>
Robert Watson       January 22, 1996
                          (1:00pm)
Myron Uman           January 23, 1996
                          (10:00am)
Chris Bernabo       January 23, 1996
                          (4:00pm)
Bill Becker          January 24, 1996
                          (9:30am)
Richard L. Kerch    January 25, 1996
                          (telephone)
                          (11:00am)
Flynt Kennedy       January 25, 1996
                          (telephone)
                          (10:00am)
David Hawkins       January 25, 1996
                          (2:00pm)
Joseph P. Glas      January 26, 1996
                          (3:00pm)
Alan Miller          January 26, 1996
                          (10:00am)
Stephen Seidel      January 29, 1996
                          (3:00pm)
Liz Barratt-Brown   January 30, 1996
                          (8:30am)
Greg Wetstone       January 30, 1996
                          (telephone)
                          (1:00pm)
Robert Slater       February 2, 1996
                          (telephone)
                          (10:00am)
Appendix C: Timeline - Acid Rain

Science and Engineering

- Robert Angus Smith identifies acid rain
- Swedish case study asserts precipitation acidity causing adverse ecological and human health effects
- Carter administration endorses creation of the U.S.-Canada Research Consultation Group on the Long Range Transport of Air Pollution
- Cleaning techniques available to remove 90 percent of the SO₂ from coal
- Under the International Joint Commission the Great Lakes Science Advisory Board rules that action on acid rain is required
- International scientific work of the U.S.-Canada Research Consultation Group on the Long Range Transport of Air Pollutants concludes that a large majority of emission sources are midwestern and northeastern United States
- National Acid Precipitation Assessment Program initiated by Carter administration
- Findings of U.S.-Canada Research Consultation Group on the Long Range Transport of Air Pollutants suggest U.S. is source of much acid rain
- EPA study concludes SO₂ regulation could prevent up to 54,000 deaths and avert billions of dollars in crop losses in Ohio Valley
- Interagency Task Force on Acid Precipitation announces that rain and snow has become even more acidic and is falling over large parts of the United States and Canada
- EPA report concludes that more research is needed before regulation is adopted
- NAS argues that a decrease in SO₂ emissions by 50 percent will translate into a decrease in acid rain by 50 percent
- White House Office of Science and Technology study concludes that no more scientific investigation is needed and regulation of SO₂ should be initiated
- Congressional Office of Technology Assessment and the Congressional Research Service argue that acid rain is a problem that needs to be dealt with

Policy and Regulation Process

- Clean Air Act of 1970 gives EPA authority to set NAAQS, promulgate NSPS, and approve SIPs
- Clean Air Act Amendments of 1977 strengthen NSPS sections; EPA implements SO₂ standards on new power plants
- Concern expressed in Congress from Montana and Minnesota about oil-fired thermal generating stations planned by Saskatchewan on the Red River and by Ontario at Attikokan leads State Department to start negotiations with Canada for an air quality agreement
- Canada initiates a series of meetings with U.S. officials about acid rain
- Statement of Principles signed, both governments recognize their obligation to control transboundary air pollution
- Canada and Scandinavian countries produce Convention on Long Range Transboundary Air Pollution, signed by United States, EEC countries and Canada
- Carter issues National Energy Plan II which would double the production and use of coal by year 2000 but keep SO₂ emissions constant due to 1977 controls
- U.S.-Canada Memorandum of Intent to negotiate an agreement on transboundary pollution
- Upon coming to power Reagan expresses his intention to honour Memorandum of Intent
- EPA reverses position and refuses to endorse its earlier conclusion that scientific evidence indicates a need for immediate SO₂ regulation, rejects Canadian proposal for a joint SO₂ reduction in chemical emissions
- Save the Boundary Waters Coalition urges the U.S. to reduce SO₂ emissions
- Senate Committee on Environment and Public Works and the House Subcommittee on Health and Environment report acid rain programs by amending the Clean Air Act
- Bilateral negotiations over acid rain between Canada and the United States break down
- Anne Burford resigns as EPA administrator
- William Ruckelshaus becomes head of EPA
- White House Interagency Task Force concedes that acid rain is "probably" manmade and something should be done about it fast
- Republican Robert Stafford of Vermont sponsors two acid rain bills in the Senate, they are blocked from debate on the floor of the Senate by Democratic Majority Leader Robert Byrd
- The United States is the only country in an international meeting in Geneva to not affirm that acid rain is a serious problem
- EPA proposes to change the way SO₂ emissions are monitored to allow 700,000 more tons in the atmosphere, also attempts to double the amount of NOₓ emissions permitted by law
Science and Engineering

Policy and Regulation Process

1984
- American Special Envoy Drew Lewis admits publicly that acid rain is caused by SO₂ emissions
- Special Envoy's Report recognizes that acid rain is a serious environmental problem and recommends that a $5 billion demonstration project be launched
- NAPAP Interim Assessment Report argues that lake acidification due primarily to anthropogenic causes other than acid rain
- White House's Office of Science and Technology Policy declares that acid rain controls are needed immediately

1986
- During Cabinet meeting Reagan rejects EPA administrator Ruckelshaus' proposal for a 25 percent reduction in acid rain emissions
- The birth of the "30 percent club" in Ottawa, Britain and the United States refuse to join in the debate
- During an economic summit in London, Canadian Prime Minister Pierre Trudeau proposes that the conference commit itself to taking strong action to reduce acid rain, Reagan opposes this motion
- Mulroney and Reagan appoint special envoys to study the acid rain issue
- Canada helps lead agreement to a Protocol to the Convention on Long Range Transboundary Air Pollution which commits signatories to a 30 percent reduction of SO₂ emissions by 1993, the United States does not sign the agreement
- Reagan endorses the Special Envoy's Report, he formally acknowledges that acid rain is a serious problem that crosses the border between the United States and Canada, he also accepts the need for immediate efforts to reduce it at its source
- Reagan promises to do something about acid rain

1988
- The United States pushes for relaxed NOₓ limits at the Geneva negotiations aimed at producing a protocol on emissions of these chemicals
- Reagan promises Canadian officials to consider proposals for an acid rain agreement
- Bush becomes president, Robert Byrd replaced by Maine Democrat Senator George Mitchell a leading environmentalist, John Dingell alters his position on acid rain and supports Bush's proposals

1990
- Clean Air Act Amendments of 1990 mandate a two-phase, market incentive-based regulatory program to reduce emissions of acid deposition precursors
- Acid rain agreement signed by Canada and the United States
Appendix D: Timeline - Ozone Layer Depletion

Science and Engineering

- Rowland and Molina's paper on their discovery that CFCs can destroy the ozone layer is published in Nature
- NAS report concludes CFCs are damaging the environment and should be controlled
- NAS report concludes that 16 percent ozone depletion will occur by late 21st century, CFCs should be regulated now

Policy and Regulation Process

- Government hearings begin on the CFC-ozone theory
- Presidential task force (IMOS) created to assess ozone damage
- International meeting hosted by the United States on CFC controls
- EPA, FDA and CPSC jointly announce a timetable for the phase-out of CFC use in nonessential products (aerosols)
- The Stratospheric Ozone Protection Amendment to the United States Clean Air Act passed by Congress
- EPA, FDA and CPSC decide to delay second phase of CFC regulations on CFC used in refrigeration, air conditioning, solvents and other industrial processes
- CFCs used in aerosols are banned in the United States
- Alliance for a Responsible CFC Policy created by DuPont
- At Oslo meeting the United States announces intention to freeze CFC production at 1979 levels
- EPA releases Advanced Notice of Proposed Rulemaking (ANPR) - a proposal for phase-out of non-essential CFCs
- UNEP creates the Ad Hoc Working Group of Legal and Technical Experts to produce a Global Framework Convention for the Protection of the Ozone Layer
- NASA, NOAA and FAA of the United States sponsor the NASA/WMO Stratospheric Ozone Workshop held in Hampton, Virginia
- First meeting of the Ad Hoc Working Group of Legal and Technical Experts created by UNEP
- Nordic Annex (Norway, Sweden, Finland) draft proposal to ban CFCs in aerosols and limit all uses of CFCs
- United States supports the proposed UNEP Global Framework Convention for Protection of the Ozone Layer including an integral protocol requiring parties to ban nonessential CFC aerosol uses, marks formal change in U.S. ozone policy
Science and Engineering

- NAS report predicts 2-4 percent ozone depletion to occur if CFCs are not regulated

- Antarctic "ozone hole" discovery by Joseph Farman published in Nature

- National Ozone Expedition (NOZE) argues CFCs are causing depletion but more sophisticated expedition to Antarctic is required to verify this finding
- Scientists favouring weather processes-dynamical explanations of the Antarctic ozone loss announce their views in a special edition of Geophysical Research Letters
- WMO/NASA scientific report argues action is required to save ozone layer

- Cost benefit study by President's Council of Economic Advisor's concludes that the monetary benefits of preventing future skin cancer deaths far outweigh costs of CFC controls
- New evidence supporting a chemical explanation for the ozone depletion in Antarctica is revealed
- On eve of Montreal Protocol, NOAA concludes that the "scientific community currently is divided..."

- Ozone Trends Panel Report argues that the link between CFCs and ozone depletion is verified

Policy and Regulation Process

- at the third session of the Ad Hoc Working Group of Legal and Technical Experts the United States opposes a proposal by Britain, France, Italy and others to delay CFC controls for three to five years
- lawsuit brought against the EPA by the NRDC for failing to go through with phase-two of CFC regulations
- Lee Thomas becomes new EPA administrator
- Vienna Convention signed

- EPA releases the Stratospheric Ozone Protection Plan which initiates a new round of international workshops
- DuPont claims there are no foreseeable CFC alternatives
- EPA and State Department convene interagency meetings to develop policy but there is little interest
- UNEP and EPA co-sponsor International Conference on the Health and Environmental Effects of Ozone Modification and Climate Change
- State Department announces its Personal Protection Plan as an alternative to CFC reductions, the plan is widely ridiculed
- Alliance for a Responsible CFC Policy and DuPont indicate support for international negotiations to address ozone layer issue
- Second economic workshop held in Leesburg Virginia with a very strong U.S. presence
- International negotiations on ozone protection resume in Geneva, the United States proposes worldwide CFC reductions of 85 percent by the next decade
- Both the House of Representatives and the Senate endorse U.S. position on strong new international CFC controls, legislation introduced calling for unilateral U.S. measures in the event that negotiations fail
- CFC producers announce that safe substitutes for the chemicals might be possible with appropriate market conditions
- Departments of Interior, Commerce and Agriculture, OMB, OSTP, begin to reopen questions about scientific evidence behind ozone depletion theory
- EPA and other scientists travel around the world to get support for treaty
- During Domestic Policy Council meeting Reagan overrules the antiregulatory group in his administration and accepts EPA and State Department's position
- Reagan succeeds in making protection of the ozone layer the first priority among environmental issues requiring common action at the economic summit in Venice
- Senate resolution calling for unilateral measures to eliminate ODSs in the event that international negotiations fail passes by a vote of 80 - 2
- Montreal Protocol signed calling for CFC reductions of 50 percent
- The United States ratifies the Montreal Protocol
Appendix E: The Legislative Geography and Dynamics of SO\textsubscript{2} Controls

Source: Office of Management and Budget, Cabinet Committee on Natural Resources and the Environment. (September 21, 1983)
Bibliography

Primary Sources


Miller, Alan S. "Ratification of the Vienna Convention for the Protection of the Ozone Layer", Hearings before the Committee on Foreign Relations — United States Senate. (March 18, 1986).


Rogers, Margaret. Director - Government Affairs - The Society of the Plastics Industry, Memorandum to Buddy Cockrell, Fran
Lichtenburg, George Sievert, Margaret Shallcross, and Frank Farfone, (March 3, 1987).


Strobasch, Donald R. "Letter to the National Clean Air Coalition". (June 10, 1983).


Uman, Myron F. "Acid Rain, 1983", Hearings before the Committee on Environment and Public Works - United States Senate. (October, 1983).


"Confidential Reporting Cable", Department of State (no date).


"EPA - Meeting on Stratospheric Ozone Depletion
"Generic Policy Question: Is a Major Sulphur Reduction Program to Control Acid Rain and Its Alleged Environmental Effects Warranted and Justified", Office of Management and Budget, Cabinet Committee on Natural Resources and the Environment. (September 21, 1983).


"Meeting on Stratospheric Ozone Depletion Regulations", U.S. Environmental Protection Agency, (February 18, 1987).


"Text of Remarks by the President at the Swearing-In Ceremony for William Ruckelshaus", (May 18, 1983).
Secondary Sources


Cohen, Bernard C. The Public's Impact on Foreign Policy.


Duffy, Michael and Dan Goodgame. Marching in Place: The Status


Fink, Bob. "The Sky is Falling!", City Magazine. No. 3, (Fall, 1987).


Gladwell, Malcolm. "Rain, rain go away: Canadians may be outraged by acid rain - but the Americans believe its all a plot to make them buy Canadian electricity", Saturday Night. Vol. 103, No. 4, (April, 1988).


Gowdy, John M. "Progress and Environmental Sustainability", *Environmental Ethics*. Vol. 16, (Spring, 1994).


Pope, Carl. "The Politics of Plunder", in Paul Boyer. *Reagan as President: Contemporary Views of the Man, His Politics and His

Porter, William C. "Issue Area and Foreign Policy Analysis", International Organization. 34, 3, (Summer, 1980).


Richardson, Louise. "Avoiding and Incurring Losses: Decision-Making in the Suez Crisis", in Janice Gross Stein and Louis W. Pauly,


Stein, Janice Gross. "Ideas, even good ideas, are not enough: changing Canada's foreign and defence policies", International


Walker, Stephen G. and Patrick McGowan. "Radical and


Yanarella, Ernest J. "The Foundations of Policy Immobilism over Acid Rain Control", in Ernest J. Yanarella and Randal H. Ihara,


"Acid Rain Debate Falls on Florida", Tampa Tribune. (July 1, 1983).


"DuPont, Mitsui Venture Has Plans to Expand Its Fluoroproducts Output", Chemical Marketing Reporter. (March 10, 1986).

"Embarrassed", Cleveland Plain Dealer. (June 11,

"Finger Pointing", Daily Charleston. (June 6, 1983).


"What Acid Rain?", The Wall Street Journal. (July 26, 1983).