# The Press and Global Environmental Change: An International Comparison of Elite Newspaper Reporting on the Acid Rain Issue from 1972 to 1992

**Edited By**

**William C. Clark and Nancy M. Dickson**

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CENTER FOR SCIENCE AND INTERNATIONAL AFFAIRS
AND
JOAN SHORENSTEIN BARONE CENTER ON THE PRESS, POLITICS AND PUBLIC POLICY

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Despite this assistance, some errors may remain. The responsibility for these is solely ours.

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# THE PRESS AND GLOBAL ENVIRONMENTAL CHANGE: AN INTERNATIONAL COMPARISON OF ELITE NEWSPAPER REPORTING ON THE ACID RAIN ISSUE FROM 1972 TO 1992

## Foreword

Almost everyone has an opinion on how the press covers public policy issues. Some people believe that reporters and their editors have a preconceived agenda and focus on those facts and stories that support that agenda, while others believe the press is more benign and has a limited effect in shaping public perceptions. Still others embrace the notion that press coverage reflects the biases and viewpoints of the government or the "establishment."

Environmental issues seem to trigger this debate over the accuracy and fairness of the media. Does the press deliberately exaggerate environmental threats? Are they beholden to one political interest or another? Where do reporters get their information? Why do they decide to pay attention to one aspect of a "story" rather than pursue a different tact? Finally, what factors tend to change a reporter's slant on an environmental issue?

Surprisingly, there has been a paucity of analysis about how the press covers environmental issues. Anecdotal descriptions are the rule, not the exception. Prompted by the vacuum in the scholarly literature and fueled by a generous grant from the IBM Environmental Research Program, scholars at Harvard's John F. Kennedy School decided to explore how the press in six different countries covered the issue of acid rain over a twenty-year period, 1972-1992. Under the direction of Prof. William Clark, teams of researchers were formed in six countries to analyze how one or two elite newspapers in each country selected for attention a subset of events, ideas, and perspectives related to the problem of acid rain and how it diffused these perspectives through society at large. The information obtained from each country was then compared to identify the similarities and differences between the countries.

This paper describes the results of this project. Professor Clark and Nancy Dickson plan to publish a book expanding on these themes which should be available in early 1997.

We at the Kennedy School deeply appreciate the confidence and support provided to us by IBM and particularly by Art Hedge (now retired), and Joe Sarsanski without whom this project would not have been possible.

Henry Lee

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## 1 OVERVIEW[2]

The acid rain issue in Canada burst into public view in the late 1970s. Environment Minister, Romeo LeBlanc, brought acid rain to the Canadian domestic and international agenda in June 1977, dramatically describing it and other airborne pollutants, as an "environmental time bomb." LeBlanc's speech was prompted neither by media coverage nor by public concern, for there was little of either at the time regarding acid rain. Rather, it was prompted by disturbing scientific findings from studies that had been underway for a few years, many of them carried out by Canadian government scientists.

In one step, the speech not only introduced the problem but also moved the yet-to-emerge debate swiftly from the scientific into the political realm. Acid rain, LeBlanc said, involved "a massive international exchange of air pollutants." The sources were located both in the United States and Canada. It was clear that "we do not have time to wait for final research before beginning political action." LeBlanc called for negotiations on a bilateral air quality accord to commence within weeks. It was no accident that LeBlanc's audience that day was the International Air Pollution Control Association, a professional body which includes environmental experts from both Canada and the United States.

Serious and sustained political attention to acid rain came a few months later in Ontario, the Canadian province most affected by acid rain, and the source of most emissions in Canada. At the same point in mid-1978 at which the provincial government announced it was backing off regulating sulphur emissions from the large Inco smelter near Sudbury, press reports linked these emissions to lake acidification in the Muskokas, a popular resort and cottage area north of, but close to, Toronto. The reports hit a nerve. A small band of environmental activists, calling itself the "Inco-stinko faction," invaded the offices of the provincial Ministry of Environment and let off a sulphur candle. The issue was taken up in the provincial legislature. In the ensuing uproar, fueled by the media coverage, the provincial environment minister was shuffled, after just seven months on the job.[3] The new minister then triggered another political land mine when he unwisely offered the view that acid rain was a "glamour issue," and said he was more concerned about such problems as landfill sites and sewage treatment. This was the last occasion when an environment minister came to office in Canada not knowing acid rain was to be taken seriously, *very* seriously.

The potent politics of acid rain was thus clear by 1978. Its parameters were basically set. The Inco-Muskokas affair and LeBlanc's proclamation, along with later ministers' statements casting acid rain as both the most serious threat to Canada's environment and the most divisive issue in Canada-United States relations, provided the basic framing of the acid rain issue for the next fifteen years. Although Canada took domestic steps in the mid-1980s to reduce SO2 emissions, it would not be until 1990 that the American Congress would act similarly, and not until 1991 that Canada and the United States eventually signed the bilateral agreement which LeBlanc had foreseen.

The way in which the acid rain story was covered by the Canadian media is the focus of the present chapter. We undertake a content analysis of the coverage of this issue in a major newspaper, and support these findings with interview material.[4] The ultimate aim is to draw some conclusions about the role played by the media in international environmental issues. Before embarking on that, some background on the Canadian political system and media would seem useful for those unfamiliar with it.

## 2 CONTEXT[5]

### 2.1 The Political System

In political typological terms, Canada is a liberal democracy, with a bicameral parliament and a federal system comprising a national government and ten provinces.[6] Executive authority is held by cabinets that are accountable to and must rely on parliament to pass proposed legislation. Defeat of a major bill in the legislature usually precipitates resignation of the government, as it did, for example, in 1979. A government with a parliamentary majority is normally quite secure, however, due to the fact that party discipline is quite strong, compared, for example, to that evident in the American congress.

The Canadian constitution specifies a division of powers between the federal and provincial governments, granting each level authority to enact laws in specified areas. Despite the fact that the federal government is given the residual authority, provinces in fact wield much, and increasing, influence, due to the nature of the division of powers, historical interpretations of the constitution and long-established habits of provincial assertiveness and federal diffidence. The vastness of Canada and its regional diversity mean that regional concerns dominate much of its politics. A major function of the federal government is to provide "equalization," to shift revenues from richer to poorer regions. A major on-going conflict concerns what the provinces see as federal intervention in various of their domains.

### 2.2 The Environment, Acid Rain and the Policy Agenda

The Canadian constitution does not specifically assign authority for environmental protection, and it is thus an area of shared jurisdiction constitutionally and of considerable contention politically. The provinces own the lands within their boundaries and have exclusive authority to develop, manage, and conserve the natural resources therein. They also have authority over "local works and undertakings," property and civil rights. The federal government, on the other hand, has authority over the sea-coast and fisheries, navigable waters, criminal law, inter-provincial and international trade, and, by convention only, responsibility for the negotiation of international treaties. In practice, provincial governments have enacted the vast majority of environmental laws and regulations, and in most instances have full authority over land, water and stationary-source air pollution. The federal government exerts regulatory authority in a rather limited number of areas, generally those with extra-provincial implications such as migratory wildlife and automobile emissions standards. Even where it has constitutional authority to regulate, such as in the fisheries, it usually defers to the provinces. Generally, then, the federal government tends to restrict itself in the environmental area to conducting research and proposing (non-binding) national standards, as well, of course, as conducting international negotiations. In the case of acid rain, in particular, it left to the provinces the task of regulating the industrial emissions that are the precursors of the problem.

Water quality, not air quality, has traditionally dominated the environmental policy agenda in Canada. Air pollution has usually been a secondary issue, and less of an issue than, for example, in the United States.[7] The explanation likely has to do with the fact that Canada has, in general, smaller cities (with some notable exceptions), less industry, less automobile traffic and colder temperatures. The urban air quality problems of major American cities are in some respects only beginning to descend on Canadian metropolises such as Vancouver.

The process of Canadian environmental policy making involves the usual array of actors, including (in addition to the federal, provincial and local governments) business and industry, environmental

groups (or ENGOs) and the public. Conflicts among these actors remain real and persistent, but both attitudes and modes of operation have been changing. The old stereotypes, particularly that of a growth-oriented private sector accustomed to unfettered resource exploitation versus no-growth, preservationist ENGOs, are increasingly being challenged. It is not uncommon in Canada in the 1990s to find business and environmental groups meeting, sometimes under the auspices of governments, and working together on solutions. To be sure, some of the old ambivalences remain. Industry still worries about governmental intervention in the "free market" under the "guise" of environmental regulation. Environment officials and ministers sometimes wonder, with reason, whether the ENGOs, which they have in many cases mobilized, fostered and supported, are allies or enemies. And many of the ENGOs question whether they are being substantively consulted or subtly co-opted. While provincial ministries are closer to local business interests than their federal counterparts, the reverse is true with respect to ENGOs. But Environment Canada's strength remains its scientific expertise not its stakeholder consultation processes. Federal environmental policy making continues to be driven more by science than by ENGOs, and constrained more by provincial interests and prerogatives than by business pressures.

Policy on transboundary issues such as acid rain, of course, necessarily involves yet another set of actors, those making up the diverse and crowded American political system. These include both business and non-governmental groups as well as the various parts of the US government. It is impossible to understand the many and varied cross-border relationships here outside of the broader context of Canada-USA relations. This relationship is undoubtedly not only one of the most complex in the world, but also one of the most cooperative. The issues that do arise between the two countries are usually resolved amicably. At the same time, it is important to note that America has gone historically from being the major threat to Canada, at the time its independence from Britain, to being its closest ally. In the immortal words of one Canadian politician, the United States is our closest friend "whether we like it or not." Given relative sizes and proximity, the American economy and culture exert pervasive and profound impacts in Canada. Americans are generally oblivious to these influences, and, some might add, to Canada itself. Canadians, even those who "like it," cannot help but be aware of the presence and influence of their large neighbor.

Thus, when confronted with claims in the media that industrial plants in the United States are sending their pollutants via the winds into Canada and damaging Canadian lakes and forests, most Canadians had little trouble imagining it to be so. Americans, even those whose economic interests were not at stake in the ensuing debate, understandably found the notions of long-range transport and acid rain much harder to accept, and it was particularly hard to accept that damage was being inflicted on 'distant' Canada. To be sure, Canada did not lack allies within the US on this issue. American environmental groups quickly and, eventually, forcefully, took up the quest of acid rain controls in Washington and state capitals. These groups, however, were (for most of the period under study here) less influential politically than were the coal and utility interests which staunchly opposed controls. The bilateral relations of the acid rain issue thus required Canadian officials and lobbyists to deal not only with centers of political authority in Washington but also those of corporate power in Ohio, West Virginia, and elsewhere.

While for Canada, the acid rain saga was to a substantial extent an international struggle over the decade of the 1980s to reduce transboundary pollution, it was also a domestic struggle to reduce Canadian emissions.[8] A growing understanding of the scientific work and mounting political pressures from concerned citizens and groups put the issue squarely on the agenda for provincial governments as well as Ottawa. One of the key events in this process was the well publicized and extraordinarily well attended "Action Seminar on Acid Precipitation" held in Toronto in November 1979, and organized by Canadian and American environmental groups, particularly the Federation of

Ontario Naturalists, Friends of the Earth, and the US National Clean Air Coalition. After the early attempts at bilateral negotiations with Washington had ground to a halt in 1982, the focus turned to achieving domestic reductions. The eastern provinces first agreed to limited emission reductions contingent upon reciprocal US action. When that was not forthcoming, they accepted more substantial cuts, in principle. With a federal government offer of financial support in 1985, the respective provincial governments finally committed themselves to reductions which amounted overall to a 50 percent cut in SO2 emissions. Actions to implement these objectives followed. When bilateral talks with Washington began again in 1989, Canada therefore finally, in the prime minister's words, had its domestic "house in order." These talks led eventually to the 1991 Canada-United States Air Quality Agreement, the cornerstone of which was a mutual exchange of commitments to reduce the precursors of acid rain.

## 2.3 The Canadian Media[9]

There should be no doubt as to why the mass media are important to societies in learning about and dealing with environmental problems. They are, most basically, the major channels of information about such matters for the average person. Government officials and interest group activists have their own specialized sources of information, but the lay public really has only the mass media. All of the media's assumed powers of communication would have little impact if it was ignored by most people, but it is clear that is not the case. Canadians come close to being media junkies. Newspapers still play a key role in social learning, even in the much vaunted electronic era.

According to the most exhaustive study of the subject, 90 percent of Canadians read one or more issues of a daily newspaper per week. Over two-thirds look at five or more issues each week. Most (60 percent) read a daily newspaper at least four times a week.[10] Four in ten claim to read more than one newspaper. All told, the average Canadian adult reports spending almost an hour per day (53 minutes) with her or his newspaper(s). It is clear in other ways as well that newspapers in Canada have not lost their readers to the lure of television.[11] Despite the ever-wider array of television channels, and despite numerous closures and mergers in the Canadian newspaper industry, aggregate weekly circulation of all Canadian daily newspapers increased significantly in recent decades, from 28 million copies in the 1970s to 32.5 in the 1980s. Circulation per capita actually increased modestly, from 1.29 to 1.33 copies (Kubas 1981, 95).[12] The focus in the present chapter, as in this book as a whole, will be solely on newspaper coverage.[13] There are various justifications for not looking here at other Canadian media. While there is no doubt television is most popular for *entertainment*, many individuals use newspapers at least equally, and perhaps more seriously, for *news*.[14] Moreover, studies have suggested that newspapers are a more frequent or important source, in particular, for *science-related* and *environmental* issues (Wade and Schramm 1969; Rankin and Melber 1980). Acid rain would almost certainly fit into this category. Finally, studies of the extent to which the mass media play an "agenda-setting" role also emphasize the importance of newspapers. Compared to television or radio, newspapers appear to be more influential in determining those issues which are picked up and become part of the public policy agenda.[15]

Curiously, perhaps, it can also be argued that newspapers are of importance even if *most* people did *not* read them, which, as shown above, is not the case. Communications research shows that the average person's understanding of the world comes not only directly from the media but also, and often especially, from inter-personal interaction and communication. That is, people are influenced by "opinion leaders," those who regularly pass on to others information and views about issues.[16] We hear about matters such as acid rain from the media, but we also hear about them, and often more convincingly, from opinion leaders such as local interest group activists, or, say, a neighbor, who happens to have a biology degree, and who has a cottage on a lake that is being acidified. And where

do these opinion leaders get their information? Various studies suggest that opinion leaders are more attentive to and more influenced by newspapers than either television or radio.[17]

## 2.4 The Selected Newspaper: *The Globe and Mail*

The logical choice of newspaper in Canada for a study of acid rain coverage is *The Globe and Mail* (hereafter referred to as the *Globe*). The *Globe* is not the country's largest circulation newspaper. Nor is it representative of all Canadian daily newspapers, any more than the *London Times* is representative of British daily newspapers or *New York Times* is representative of American ones.[18] It comes closest in Canada to a "quality" or "prestige" national newspaper in the sense of both of these, and, like them, is highly influential both in political and media circles.[19]

More than any other Canadian outlet, the *Globe* sets the agenda of the national media. Like the *New York Times*, 'other news organizations use it as a source of guidance for their own coverage and comment.'[20] The vast majority of Canada's 'media élite', over 90 percent of them, read the *Globe* (or, in some cases, perhaps, *admit* to doing so). Thus, the *Globe's* coverage influences the rest of the Canadian media, both print and electronic. Stories in the *Globe* (and, to some extent, in Canadian newspapers generally) have more impact on and provide more cues for the broadcast media than vice versa.[21] This agenda-setting influence also extends directly into the political realm. The *Globe* is widely read by -- indeed, is virtually required morning reading for -- ministers and civil servants alike, at least in English Canada (Fletcher 1981). Most of the questions asked by opposition parties in the Canadian House of Commons on any given day during the 1970s and 1980s traditionally came from that morning's *Globe* (Breen 1977).[22]

People who want to influence public affairs make a great effort to get their views carried in the *Globe*. This was very much the case in the acid rain debate, as cabinet ministers, government officials, environmentalists, and, to a limited degree, business leaders, scrambled to be interviewed. Some even kept a note of the *Globe's* deadlines posted by their telephones. One federal environment minister once called to do an acid rain interview with a *Globe* reporter, from a phone booth, during his Christmas shopping.[23]

The Globe refers to itself on its masthead as "Canada's National Newspaper." In one sense, it cannot live up to this claim. Published in English only, the *Globe* does not reach well into Quebec and other French-language areas across Canada, although it tries harder to cover Quebec events than do other non-Quebec newspapers.[24] In other respects, it does measure up to that image -- a near-impossible task given the regionalisms of Canada. It has established a series of bureaus not only in Ottawa (and, of course, Toronto, where it is based) but also in other major cities. Moreover, the *Globe* is the only Canadian paper delivered nation-wide. For years this was done by air, and delivery service was often erratic, especially during Canada's frequent winter snowstorms. Since establishing satellite transmission to printing plants across Canada during the 1980s, the *Globe* is reliably available in boxes and on doorsteps in major Canadian cities every morning.

Although it still has a reputation, especially in the west, for what is termed in Canada a "central Canadian" (i.e., Toronto) bias, the *Globe* has worked hard to overcome its roots as a Toronto paper. As a result, *Globe* stories tend much more than those of most newspapers to have a national orientation. For the *Globe*, "out of town stories have priority over Toronto stories."[25] By contrast, Canadian newspapers typically focus on their local market, usually a city, and sometimes the immediately surrounding region. Toronto newspaper environment reporters, for example, are normally under pressure to find the metropolitan area "angle" to environment stories.[26] In the case of acid rain, this posed a problem, as most of the impacts being measured were in Precambrian Shield

regions at least 100 kilometers north of the city. (A threat to Torontonians' cottage country, the Muskokas, made the connection much easier, however.)

For many decades the *Globe* has been regarded in Canada as a conservative newspaper. It supported and was closely identified with the Progressive Conservative party, traditionally the main centre-right party in Canada. While the paper often took a more or less centrist position during the 1970s and into the 1980s, supporting other political parties on occasion, it is widely perceived to have moved to the political right in the 1990s under a new editor, and to have become even more business oriented than it was.[27] At the same time, it has also traditionally favored environmental protection, including stronger controls on water pollution and, more recently, on the air pollutants that form acid rain. The *Globe* was one of the first Canadian newspapers to establish a special environment beat, in 1971, and has had a regular environmental reporter continuously ever since.[28]

## 3 CONTENT ANALYSIS OF PRESS COVERAGE

### 3.1 Methodology

The articles on acid rain analyzed here were identified and grouped in a variety of ways. The basic search used the *Globe and Mail* electronic database, known as *InfoGlobe*. This database only began in November 1977, however, and no index of pre-1977 articles exists, even on paper. Articles appearing before 1977 were thus identified from the files of *Globe* environmental writers and from the authors' own research. Although there is thus no guarantee that this set is complete, it is likely that it is substantially so. As noted below, there were very few articles before 1977.

The initial search using *InfoGlobe* selected any article from 1977 to 1992 containing the keywords *acid rain* or *acidic rain, acid rainfall* or *acidic rainfall, acid precipitation* or *acidic precipitation* in its text. This search captured more than 3,300 articles. Acid rain was clearly, and by any standard, a major story in Canada during this period. Some of these articles though were discarded for the purposes of this study because they were (1) duplicate articles from separate editions of the paper; (2) part of a daily report on the pH values of acid rain falling in Canada; or (3) articles that mentioned acid rain only in passing.[29] Once these items had been eliminated, 1,134 articles remained. (By "article," we mean here not only "hard" news stories, but also feature stories and editorials as well as opinion pieces, written by outsiders, usually termed "op-ed" articles because they appear on the page opposite the editorials.)

To reduce the time and cost of coding such a large number of items, the search was then limited, first, to those articles in the *news*, *science* or *features* sections of the newspaper, and then to those articles identified as Canadian in content. The first cut left a total of 817 articles, and the second, 586. Of these 586 articles, a 50 percent random selection was then taken.[30] (This selection will be referred to below as the "random set.") Coding of both sets of articles followed the protocol developed for the project. (See appendix for this coding scheme.)[31]

### 3.2 Issues in Perspective

#### 3.2.1 Timing

When did Canadian media coverage on acid rain begin? When did it peak? What was the overall pattern in coverage over time? Given the greater comprehensiveness of *InfoGlobe*, it only makes sense to use its data here to answer these questions rather than use the smaller sample from the

random set.[32] The *InfoGlobe* data show a single article in 1977, with coverage rising rapidly to an initial peak of 261 items in 1981. A second and much higher peak then occurred in 1985, totaling 419 articles. This was the point of maximum coverage of acid rain in the *Globe*. After a brief dip in 1986, there was another, only slightly lower crest in 1987. Thus, over the peak 1985-87 period, there was, on average, about eight items mentioning acid rain every week, or more than one per day.[33] This represents very substantial coverage indeed. After 1987, however, the number of items falls off dramatically, roughly as sharply as the rise during the 1978-81 period. In short, the overall pattern in coverage roughly represents what is commonly called a "bell curve."

This pattern of media coverage of a newly discovered issue rising to a peak and then falling off would seem to be similar to that for other environmental issues. For example, water pollution coverage in the Canadian and American media followed a similar pattern in the 1960s and 1970s.[34] The pattern may well be characteristic of certain public policy issues in general. There are also explanations for such a pattern arising from the nature of print journalism itself.

The most obvious explanation, perhaps, is that the media thrive on conflict, especially conflict in the political arena. Thus media attention grew as the acid rain issue moved from the difficult-to-cover realm of science into the more familiar realm of politics, both domestic and international. Then, as the political decisions to control emissions were made beginning in the mid-1980s, the conflicts began to disappear and the coverage dropped. In complementary fashion, the early rise can also be attributed in part to what one *Globe* editor termed "a degree of advocacy." Many journalists believe that newspapers have a mission to draw attention to issues. Acid rain was, suggested another, "*our* story . . . we pushed it." The eventual decline in coverage can similarly be explained in competitive terms. There were, as always, new issues arising demanding more attention of Canadians in the late 1980s, including those of constitutional reform and free trade with the United States. There is also what might be described as a certain "been there, covered that" phenomenon. As another *Globe* veteran noted, the media have "an amazingly short attention span." Despite the dramas, he added, "it is a struggle not to get bored with the Rwandas."[35] The same might be said, perhaps, about dead lakes.

An interesting insight into the role of the media in environmental issues is provided by two facts here. First, there was some coverage of acid rain well prior to LeBlanc's speech in 1977 and the Inco emissions fuss in 1978. Second, and more importantly, there were only a few such articles, and none appear to have prompted subsequent ones.

The earliest acid rain item found in the *Globe* appeared in 1971. It was jointly authored by Richard Beamish and Harold Harvey, respectively, a Ph.D. from and a professor at the University of Toronto. Their "op-ed" article talked about acidification of the La Cloche Lakes in Northern Ontario. Notably, they attributed the acidification to the huge Inco smelter northeast of the lakes.[36] Long-range transport is not mentioned, nor is the term "acid rain" used, but the nature of the problem was clear. The article apparently attracted little attention, perhaps because air pollution from Inco was a well-recognized phenomenon and the affected area was a long distance from major population centers.[37] In any case, the acid rain story did not take off.

The next mention, and first acid rain related item by a staff writer for the *Globe* (Peter Whelan), did not appear until two years later.[38] The 1973 Whelan article noted that lakes near Sudbury had been rendered essentially lifeless due to acidification, attributed the condition to dilute sulfuric acid in precipitation, and (like Beamish and Harvey) blamed the Sudbury metal smelters. There was no follow-up to this article, perhaps because its focus was less on the damage being done than on efforts being made to counter the problem. The next items on the issue did not appear until two years later,

and then two years after that. In February 1977, freelance science writer Lydia Dotto wrote a long *Globe* article explaining the general phenomenon of acid rain. Dotto noted the various effects, including damage to aquatic and terrestrial ecosystems, basing her observations on the scientific work of American Gene Likens and that of a team at the University of Toronto.[39] Once again, the link to the Sudbury smelters was explicit, but the concept of long-range transport was also explained.[40] This article, and LeBlanc's speech a few months later, attracted some attention, but, once again, the story did not take off. As one former Environment Canada official recalls, there was still "no big bang in the media . . . no one was running to jump on the issue."[41] It was only with the Inco-Muskoka affair the following year that media coverage began to mount, and the first sustained exchange of letters-to-the-editor began. (The *Globe* began to run them under a "standing head" on the op-ed pages which always read, "Acid rain.")

What is of most interest about these early articles is that they show clearly that the acid rain issue first emerged in the Canadian media, not in the late 1970s, but in the early 1970s. Acid rain was thus not the instant political issue it appeared to be from a quick reading of the coverage of 1978-79. On the contrary, it took years to "take off" as a story. The phenomenon of acidic precipitation languished while it was only linked to a familiar problem, smelter emissions causing "local" pollution around Sudbury. It became a political issue and a media cause when it was linked to a new and surprising problem, the damage those emissions were causing to popular vacation and fishing lakes hundreds of kilometers away from Sudbury -- and much closer to most of those who read Toronto-based newspapers. The other observation that might be made here is that, LeBlanc's statement aside, the acid rain story in Canada began life as a domestic problem, one that arose in Canada and was caused by Canadian emissions. This only partial conception of the problem, as we shall see, did not last long.

As noted above, the high level of media attention devoted to acid rain was not, indeed, could not be, sustained forever. The ink and newsprint devoted to acid rain declined after the mid-1980s when domestic (and unilateral) action was taken in Canada to control emissions. At the same time, there were few new scientific discoveries about acid rain to keep the story going. After the United States Congress in 1990 passed a new version of the Clean Air Act, which included the long-sought acid rain controls, there was even less to report. The signing of the Canada- United States Air Quality Agreement in early 1991 aroused but passing interest. Acid rain, once a weekly if not daily story, virtually disappeared from the pages of the *Globe*.[42]

### 3.2.2 Framing

What was the nature of the acid rain story as portrayed by the Canadian media? That is, how was the story 'framed' for newspaper readers? Where reporters and editors generally placed the emphasis can be analyzed in terms of whether stories focus on the science, environmental, or political aspects of acid rain, whether they portray it as a domestic or international story, and whether they emphasize certain causes and certain effects of acid rain more than others.

Without any doubt, acid rain was predominantly a political story in Canada. The issue emerged because of scientific research, and was, obviously, one with a strong environmental element to it. But in terms of newspaper coverage, the framing was overwhelmingly political. (See Figure 2.) Most of the articles in the random set (78 percent) were more political than scientific or environmental.[43]

There is also no doubt from the data that the acid rain story was for Canada primarily an international one. (See Figure 3.) By this is not meant that acid rain was something affecting other countries or

something discussed abroad. Rather, for Canada, acid rain was an international story in the sense that it was heavily a problem of pollution originating in the United States which then crossed over into and affected Canada. This was the framing given the issue by LeBlanc, and was the framing it had throughout its life on the public agenda. Even when the articles that were largely domestic in focus and those that had both an international and domestic focus are combined, they still amount only to a minority (38 percent) of the overall total. These numbers reflect a key fact: a series of Canadian politicians found quickly that statements on acid rain, perhaps especially those in which the United States got at least its share of the blame, would be covered well in the Canadian media.[44]

Attributions of cause and discussions of the effects of acid rain are also an important part of the story framing. Roughly half of all the randomly selected articles neither attributed causes and nor discussed effects. Of those that did deal with causes, most pointed to electricity generation as a source of emissions. (See Figure 4.) This tendency is to a substantial degree the result of coverage of the sources of acid rain in the United States, where electricity generation was a much larger source than it was in Canada. There were about half as many references overall to smelting sources (the chief cause in Canada), and only a few references to others such as automobiles. References to natural or other anthropogenic sources of acid rain were rare.

Of those articles which dealt with specific effects of acid rain, the largest number noted damage to lakes and fish stocks (37 percent). The most common image from the 1970s on was thus of acid rain 'killing' lakes, especially in Ontario, but also as far away as Nova Scotia. Almost as many articles though referred to damage to forests (30 percent). Health effects and agricultural damage ranked third and fourth. (See Figure 5.) While human health concerns were a relatively minor focus, these stories were often dramatic. A 2 May 1980 story, for example, quoted a federal health department official saying that acidic water could corrode water pipes and leach toxic metals into the water supply, and noted that several studies had been launched on potential health hazards of acid rain. Other later stories noted studies showing that southern Ontario school children suffered more lung problems than children in the relatively cleaner Manitoba environment and suggested acidic air pollution as a probable cause (20 September 1985), and that acid rain was suspected as the cause of high levels of mercury in fish from Ontario lakes (17 April 1984; 20 September 1985). The health aspect of the problem, however, never captured a critical level of attention in the media or within government.

Although the coverage about effects did not change dramatically over time, there was a notable shift. Prior to 1985 the dominant focus was on aquatic effects. After 1985, there was as much or more coverage of forest effects as of lake and stream damage. This shift away from what had been the dominant Canadian concern for aquatic ecosystems may have been due to reporters and editors looking for "new angles" to what was becoming, by the mid-1980s, an old story. Not that a new angle, per se, will be sufficient. Each major new wrinkle to the acid rain story had to be "sold" to at least some editors.

The "dying" of the Quebec maple forests was a case in point. After hearing about dieback in German forests and becoming convinced by various government and university sources in Canada that acid rain posed a threat to trees, a *Globe* reporter spent a day tramping through a damaged maple forest south of Quebec City with a photographer and a scientist from the Quebec Ministry of Environment and Resources. The next day, he presented his editor with a major story saying that acid rain seemed to be killing maple forests. Asked by his news editor about the importance of the story, the reporter said, "this story means that if damage continues, you won't have maple syrup any more." The story ran on the *Globe's* front page.

With respect to policy options, the emphasis in the Canadian media was on reducing at the source the emissions causing acid rain (rather than on impact-mitigation measures) and on regulations to reduce both domestic emissions (especially from smelters and electric power plants) and emissions in the United States (mainly from electric power plants). (See Figure 6.) There was only minor coverage of mitigation measures, designed to reduce the effects of acid rain. Indeed, the emphasis was much less on the technological options than on the need for new regulations, both within Canada and in the USA. The assumption would seem to have been that "the way" would be found if "the will" was there.

Much of the domestic debate in Canada was focused around the question of whether or not Inco's Sudbury smelter and Ontario Hydro's coal-fired power plants should or should not be forced to reduce emissions of SO2, and whether or not they could do so at reasonable cost. It will be recalled that the Inco issue had been at the forefront of the political brouhaha in Ontario in 1978 which made clear that acid rain had become a major public policy concern. The debate continued for years. On 25 July 1979, for example, a long op-ed piece by Marion Bryden, the Ontario New Democratic Party environment critic, accused the provincial government and Environment Minister Harry Parrott of delaying domestic pollution controls while trying to push for an international agreement committing the US to pollution controls. By the early 1980s, Ontario Hydro was under pressure in the pages of the *Globe* to make significant cuts in emissions from its coal-burning power plants. The Hydro Chairman, Hugh Macaulay, wrote letters to the *Globe* editor defending his company. At one point he compared Hydro's acid gas emissions to a bucket of water during a flood. The analogy clearly failed to impress, either the aroused public or the politicians. Along with Inco, Ontario Hydro was prominently on the list of targets when a new provincial government embarked on its acid rain control program in 1985.

Once the Ontario government had mandated reductions in the major emission sources, the media attention declined but did not cease. Inco's message and its tone changed though. After it had come up with a method of making substantial pollution cuts, Inco took to buying ads rather than writing letters. One ad that ran in the *Globe* on 2 December 1986, on page 2 no less, was headed "Acid Test." It acknowledged that Inco was a source of acid rain and said, "We are firmly committed to further reductions."

Impact-mitigation measures such as liming lakes were only occasionally mentioned in the Canadian media. Interestingly enough, liming had been featured prominently in the first story on acid rain by a *Globe* staff writer, in 1973. Peter Whelan noted that the Ontario Ministry of the Environment was putting limestone in acidified lakes near the Sudbury metal smelters. A later 27 July 1981 story about the impact of the acid rain on lakes in northern Ontario noted the province was spending $720,000 (Canadian) to lime lakes as a buffer against acidification. The story noted that even for this amount only a few of the thousands of endangered lakes could be so treated. As some Reagan administration officials began to advocate liming as an alternative to emissions reductions, Canadian officials sought to discredit it as a viable option. The whole subject of liming became politically controversial in Canada. It was also clear, however, that liming was an expensive palliative which could address neither the roots nor breadth of the problem.

### 3.2.3 Slant

Coverage of acid rain or any other phenomenon can also be described in terms of its "slant" or bias, or, perhaps, its 'flavor'. Was acid rain pictured as a problem in need of a solution, or one in need of study? Was it a story in which certain actors were portrayed in more negative, or more positive, terms than others?

Acid rain was seldom portrayed in the *Globe* as a problem that needed more study and research. (See Figure 7.) Very few of the articles had a "wait-and-see" slant to them. The overwhelming majority of those which referred to action (about 70 percent) clearly asserted or assumed there was a need for corrective action. The emphasis in favor of action, though, declined noticeably after 1985 when the domestic decision to reduce emissions was made.

Most of the acid rain coverage in the *Globe* avoided a discernible bias, either positive or negative, toward any actor in this drama. That is to say, according to the coding scheme used here, most of it was neutral rather than either positive or negative in slant. Across all the articles which revealed a positive orientation toward any group, more were positive toward environmentalists than toward government. The difference was not great, however. (See Figure 8.) Of that minority of articles which revealed a negative orientation toward any actor, more were critical of government than of industry (but there were many more articles overall mentioning government than industry).

It is more illuminating to look separately at the coverage of the various actors in the saga. Here the acid rain story had clear elements of the good, the bad and the merely ugly. There were virtually no stories dealing with environmental groups in which they were portrayed negatively. In contrast, there were few stories in which industry was shown wholly positively. Government was cast both negatively and positively (though not usually in the same article), but, overall, negative references to governments outnumbered the positive. In other words, governments both provincial and federal were more commonly criticized than praised both through the media and by the media.

Coverage of both federal and provincial government statements or actions, but especially of those emanating from Ottawa, was not as positive as it was solely by accident. Acid rain was the focus of one of the most sustained and intensive public relations exercises in the history of Environment Canada, and perhaps of the Canadian government.[45] The campaign began with the LeBlanc speech in 1977 and reached its high point in a massive effort to publicize the 1985 federal-provincial agreement on sulphur emission controls, and of course, to secure favorable coverage of these commitments.[46] Little was left to chance in the latter effort. A long list of opinion leaders was identified, and each person was sent an information package prior to the formal announcement of the accord. The information sent was specific to the recipient; those in industry got a different package than those in environmental groups, for example. Packages were sent to recipients at various levels of the key organizations to ensure that, at whatever level inquiries from the media were made, the reporters would reach someone well informed about the announcement. Similarly, the major environmental group on this issue, the Canadian Coalition on Acid Rain, also devoted considerable time to working with the media, and clearly reaped the benefits. Industry obviously tried to get similar treatment but, given the very nature of the acid rain problem, was faced with a decidedly more uphill battle.

In contrast to the more or less even-handed treatment of Canadian governments, coverage of the United States government was decidedly and consistently negative, or was at least until the US Congress mandated acid rain controls in 1990. Articles, especially those quoting ministers, talked publicly about "literally dumping your garbage on our country" and about the US "causing a 'rain of death' on Canada." A Canadian cabinet minister referred, in the same breath, to Senator Robert Byrd, a staunch foe of emission controls, and to "Neanderthals."[47] (The remark did not go unnoticed in Washington or West Virginia, Byrd's home state, and was probably counter-productive.) It was the Reagan administration though which came in for particular criticism. The Canadian ambassador, for example, accused it, in the pages of the *Globe*, of "shirking its treaty obligations to prevent air pollution from causing damage in Canada." When the administration attempted to re-write some bilateral scientific reports, Washington was charged with "blatant efforts to manipulate [the

work] of scientists" and of "destroying 70 years of co-operation on pollution between the two countries."

While the official rhetoric generally became less harsh during the Mulroney government years (1984-93), the media coverage on acid rain did not. A 24 September 1986 *Globe* editorial, for example, lashed out at what was described as "the Orwellian maze of double-speak and double-think so characteristic of Reaganrule." (Thus spoke a conservative newspaper, but, it might be emphasized, a *Canadian* conservative newspaper, not an American one.) The perception that the United States was to blame for a major part of Canada's acid rain problem was in this way generally encouraged by the media, and most Canadians were in any case predisposed to blame the Americans for more than their actual share of the problem (which was, roughly, about half).

### 3.2.4 Sources

At the *Globe*, the environment beat reporter was the lead journalist for acid rain coverage. The production of news in a daily newspaper, however, is a high speed operation, involving dozens of people. The deadlines, usually several in a day, mean that an important story must often be researched, written, edited and printed within a few hours. Fast-breaking news stories, coupled with the fact that news on acid rain had a habit of springing up rapidly in many places, including legislatures and corporate boardrooms, meant the environment beat reporter did not, indeed could not, write the majority of stories.[48] Coverage was often done by political or business reporters who were on the scene when the announcements were made. Given the political nature of much of the acid rain coverage, a great number of the acid rain stories were thus written by reporters in the Queen's Park (Ontario government) bureau or the Parliament Hill (Ottawa) or Washington bureaus. A significant number of stories also came from the wire services, such as Canadian Press and Associated Press in the United States.

The vast proportion of stories on acid rain utilized Canadian government sources, federal and/or provincial. The proportion was always over 60 percent of the stories and often as high as 80 percent. The political nature of the coverage, noted above, is one reason for this pattern of sources. Another was the extensive Canadian government effort to "get the story out." Foreign government officials, on the other hand, were seldom used by the *Globe's* reporters. Industry representatives and environmental groups also appear in the coverage, though much less often than governmental officials.

Once it began operations in 1981, the Canadian Coalition on Acid Rain became the chief ENGO contact for the media. An umbrella organization encompassing, eventually, over 50 separate groups, the Coalition was well funded both by private contributions and by the Canadian federal government. Michael Perley and Adele Hurley of the Coalition provided information to the *Globe* on a regular basis, and were always available to provide comments on actions or, more often, on inaction by governments or industry. The relationship was symbiotic. The Coalition needed the media to put pressure on governments to act on acid rain (and to maintain its public profile). The media found the Coalition to be a valuable and reliable source of both facts and opinions on a complex subject.[49]

## 4 CONCLUSION

While acid rain appears to have emerged suddenly in the late 1970s as a major social issue in Canada, its emergence as a topic of media coverage was not as sudden. Stories about it appeared occasionally over the decade of the 1970s, without prompting much attention. The problem of acid rain was first

interpreted in terms of the familiar issue of local, industrial air pollution, and only later as a new phenomenon. It was also in some respects an esoteric problem that required translation for a mass readership. The emergence of the acid rain story was initially a "top-down" process, in the sense that scientists and some politicians took it up as a cause, provided the necessary translation, often in dramatic terms, and promoted media attention. The acid rain story also involved a "bottom-up" process, in the sense that media coverage and public concern about the problem was instrumental in alerting those governments and politicians who had been unconvinced.

The broader impact of the story was considerable. After the media coverage was in full swing, Canadians became increasingly sensitized to the idea that the ecosystem is fragile, to the now well-accepted fact that low concentrations of pollutants can cause serious environmental damage, and to the realization that dilution is not the solution to pollution. In short, the acid rain story became part of the environmental education process underway globally in recent decades.

Coverage of acid rain in the *Globe and Mail*, and likely in the Canadian media generally, had a number of distinct features. It was a political story more than a scientific or environmental one, and an international story more than a domestic one. It focused on smelters and fossil-burning electricity generating plants as the sources of acid rain more than on other sources, and on the damage done to aquatic ecosystems more than effects on forests, agriculture, or structures. The coverage was predominantly and consistently oriented toward taking action, toward reducing the emissions that cause acid rain, rather than merely doing more research or taking effect-mitigation measures (such as liming lakes). The fact that the story as portrayed in the media was, overall, more political than scientific and largely about the need to take action, however, should not disguise the vital importance of the science angle nor obscure the abundant resistance against taking action. The scientific basis underlying the acid rain problem *was* crucial, but it was arguably more important in mobilizing public support for action than it was in directly prompting that action by governments. For political bodies like cabinets, consisting as they do of politicians, convincing science is often not enough. It needs to be accompanied by loud public demands. While the scientific evidence was sufficient for environmental groups to begin to demand action, strong evidence of a public consensus in favor of regulation was needed before governments responded.

None of the characterizations of the acid rain coverage seems, on reflection, particularly surprising. They are largely a function of the basic facts of the problem, in particular, that the best documented and probably most serious effects of acid rain are to aquatic systems, that this threat was nevertheless considerable in terms of geographic area and resources, and that much of Canada's acid rain was imported from the United States. In this sense, Canadian media coverage was a function of the underlying structure of the acid rain issue. If this framing were to be faulted, it could be argued that the Canadian media perhaps over-emphasized the "international" nature of the problem (i.e., the transboundary flows) and under-emphasized the domestic contribution. Although it is dangerous to assume appropriate quotas for coverage, it might be argued that the domestic sources, responsible as they were for roughly 50 percent of the acid rain, might have received somewhat more media attention and the American aspects somewhat less.[50]

We can also now more fully understand the timing of acid rain coverage. The nature of the acid rain story goes a long way toward explaining both its rise and demise as a feature of the Canadian media. While acid rain emerged as an issue because of its science, it ascended and declined as a media focus more because of its politics. Very simply, as the political elite discovered and grappled with the issue, political stories emerged and held center stage. Acid rain as a scientific discovery became almost secondary to acid rain as a political football. But the politics ran its course, as political issues usually do in the media. After 1985 there was no longer any doubt about what domestic actions

Canada would take to deal with acid rain. There was similarly little doubt by then that the Reagan administration was not about to take similar action in the United States. Moreover, to some extent, the standard story -- the "US-is-to-blame-and-must-cut-emissions" story -- had become very old hat. There is nothing more likely to come to a quick end in a newsroom or on an editor's 'spike' than a story that is old hat.

When American control regulations were finally enacted in 1990, and a bilateral Canada-USA agreement concluded in 1991, the acid rain story (or at least the first phase thereof) had reached its logical conclusion. It will take a broad consensus among scientists and environmental officials that reductions of a greater magnitude than the current 50 percent cuts are needed before acid rain will return in force to the news and editorial pages of Canadian newspapers.

**Figure 1.** Frequency of all articles and coded articles in the *Globe and Mail* scaled as a proportion of the number of articles in the year of maximum citations (1985 = 419 articles for all articles; 1987 = 63 articles for coded articles; 1984 = 47 articles for news articles), 1972-1992. The coded analysis covered 293 articles printed in the *Globe and Mail* between 1972 and 1992. The electronic database InfoGlobe was searched for the period 1977 to 1992 to identify articles on acid rain. The search identified 3,406 articles containing the key words acid rain or acidic rain, acid rainfall or acidic rainfall, acid precipitation or acidic precipitation in the article text. Articles pre-1977 were identified from the files of *Globe* environmental writers and from the authors' own research. The coded sample was obtained by deleting duplicate articles from separate editions of the paper; by deleting articles from the part of a daily report on the pH values of acid rain falling in Canada; and by deleting articles that mentioned acid rain only in passing. Once these items had been eliminated, 1,134 articles remained. The search was then limited, first, to those articles in the news, science or features sections of the newspaper, and then to those articles identified as Canadian in content. The first cut left a total of 817 articles, and the second, 586. Of these 586 articles, a 50 percent random selection was taken, referred to as the "coded" sample of 293 articles.

FIGURE 1
NEWSPAPER ATTENTION -- "ACID RAIN" -- CANADA

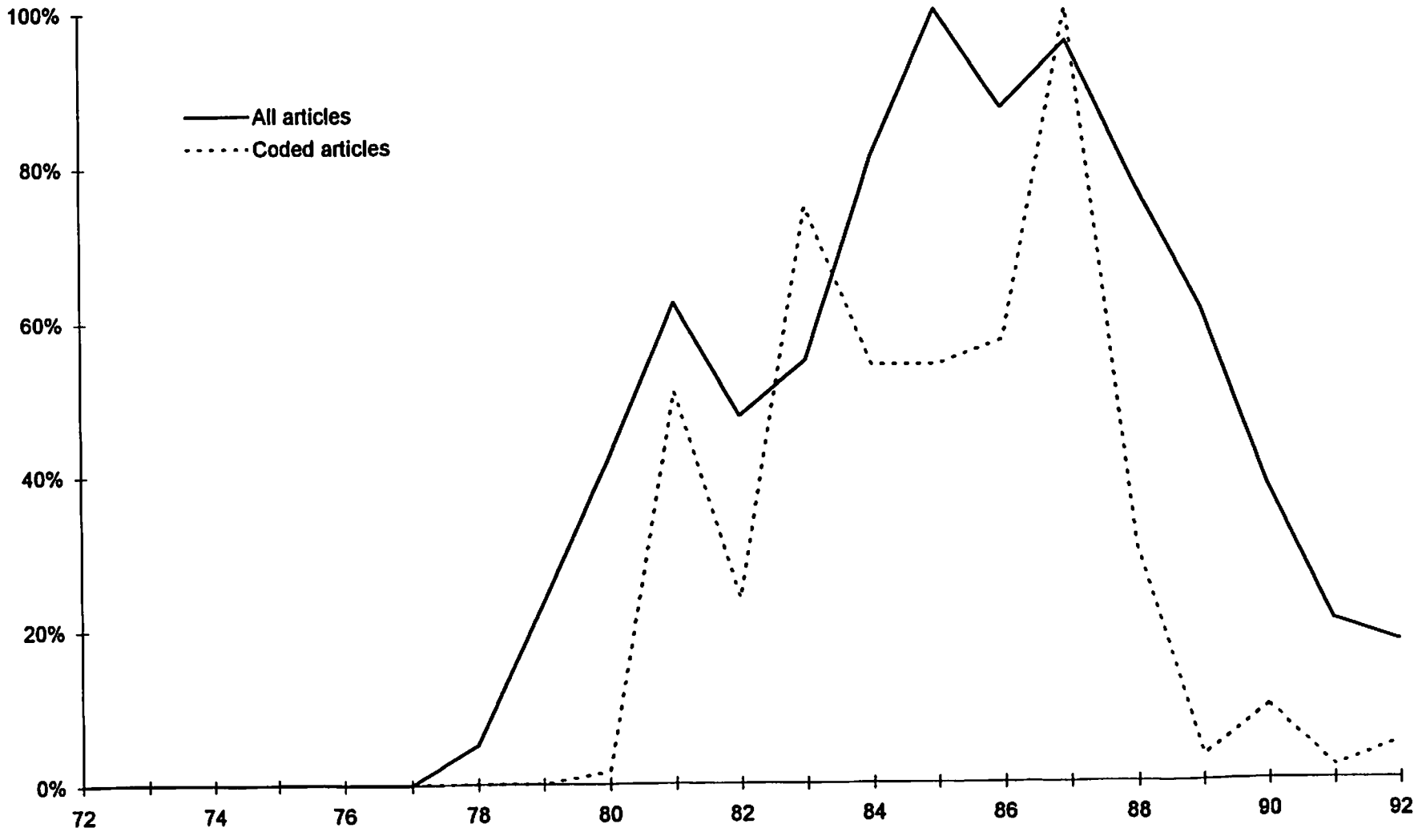


**Figure 2.** Percentage of *Globe and Mail* articles in a given year belonging to each category, 1980-1992. Each article was assigned to only one of the following categories: purely a "domestic" scope; "domestic and transboundary" includes those articles that mention transboundary aspects but have a domestic focus; and "non-domestic" includes articles that have the transboundary aspect as the main focus or cover another country's problems. This analysis was performed on all coded articles identified in Figure 1.

FIGURE 2
GEOGRAPHIC FOCUS -- "ACID RAIN" -- CANADA

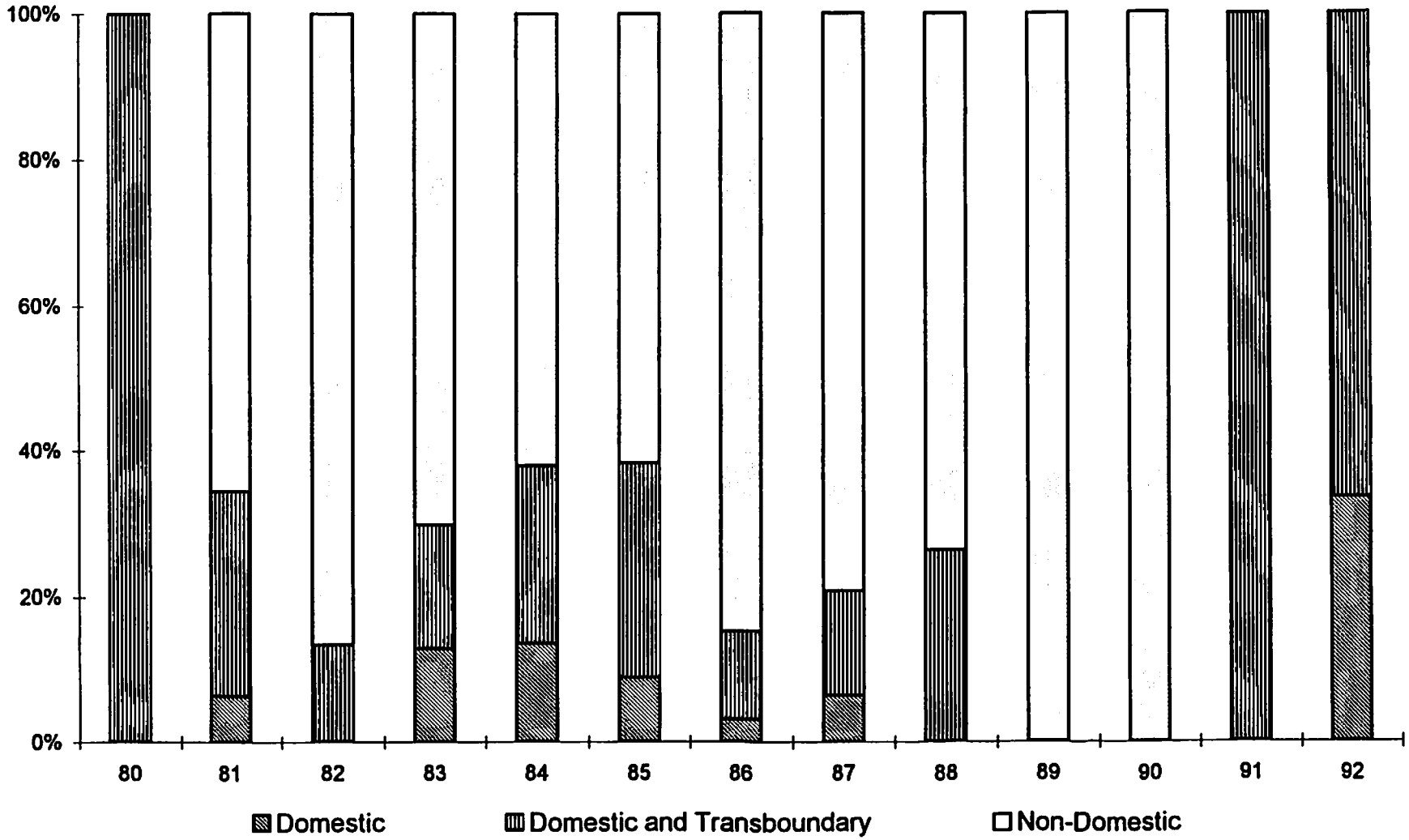


**Figure 3.** Percentage of all causes of "acid rain" mentioned in *Globe and Mail* articles in a given year belonging to each category, 1980-1992. Each article may have more than one cause coded. This analysis was performed on all coded articles identified in Figure 1.

FIGURE 3
CAUSES -- "ACID RAIN" -- CANADA

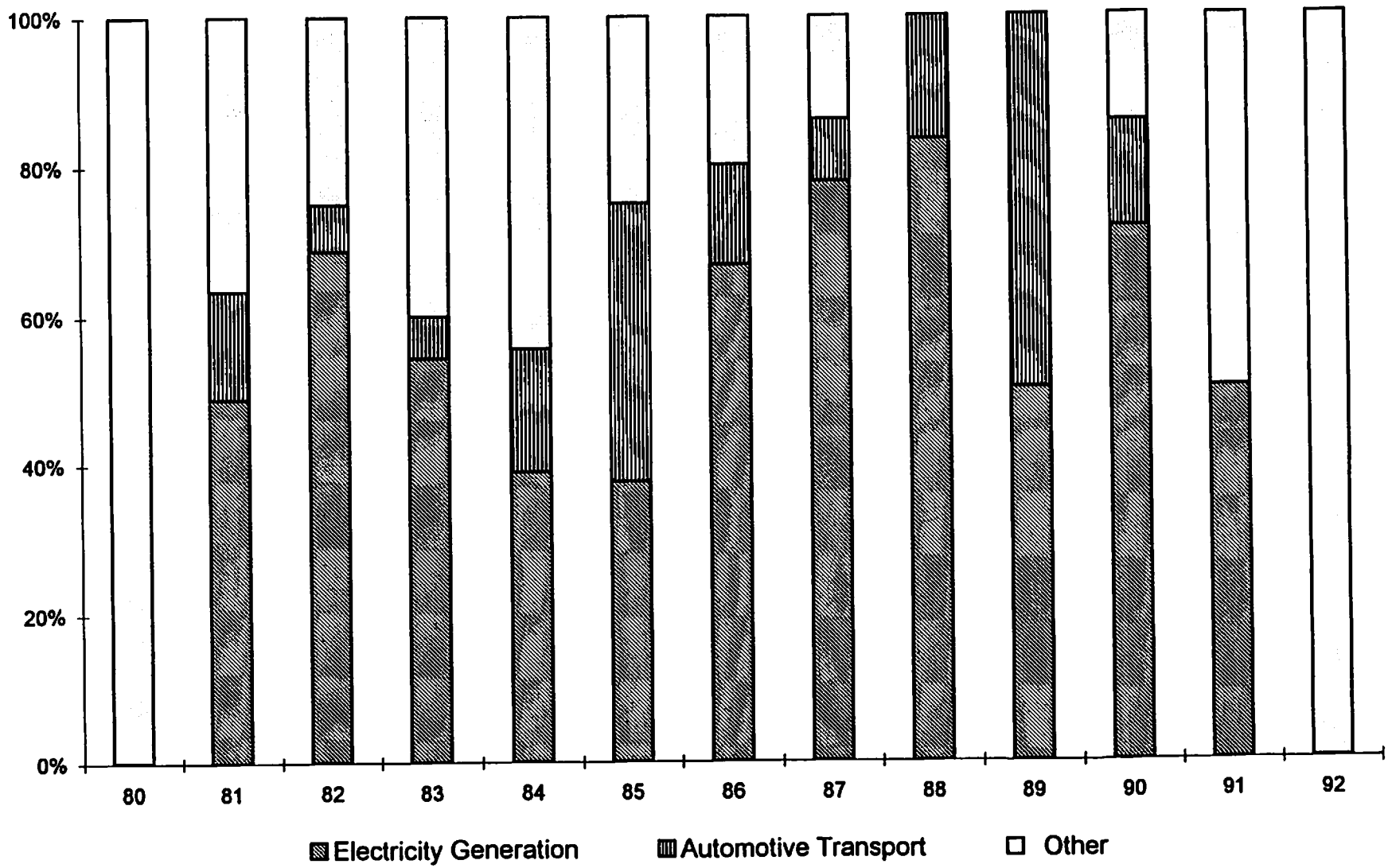


**Figure 4.** Percentage of all primary impacts of "acid rain" mentioned in *Globe and Mail* articles in a given year belonging to each category, 1980-1992. Each article may have had more than one primary impact coded. "Other" is dominated by smelter emissions. Generic secondary effects, e.g., economic damage, are not included unless they are posed in terms of one of the listed primary impacts, e.g., the economic impact on forests is generally coded under forest impacts. This analysis was performed on all coded articles identified in Figure 1.

FIGURE 4
PRIMARY IMPACTS -- "ACID RAIN" -- CANADA

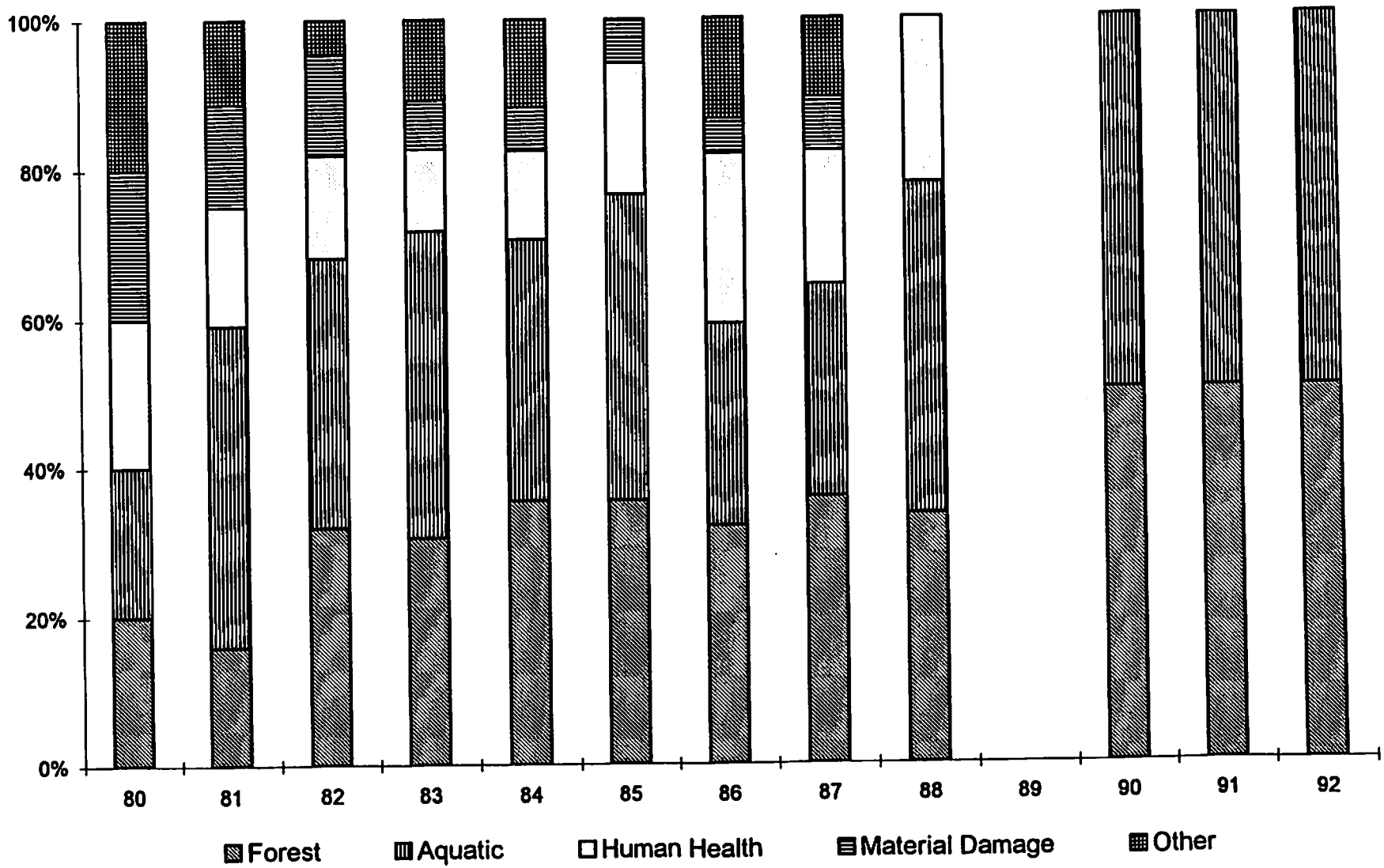


**Figure 5.** Percentage of all options to manage "acid rain" mentioned in *Globe and Mail* articles in a given year belonging to each category, 1980-1992. Each article may have had more than one of the following option categories coded: "technology - emissions" includes technologies such as those that reduce emissions in power plants and autos, fuel switching, and renewable energies. "Technologies - impacts" are technologies designed to mitigate impacts such as liming, fertilizing, or breeding resistant species. "Rules - domestic" include emissions standards for power plants or autos, and lawsuits. "Rules - international" includes international or bilateral regulations or agreements. "Incentives" could include financial incentives and education. This analysis was performed on all coded articles identified in Figure 1.

FIGURE 5
OPTIONS -- "ACID RAIN" -- CANADA

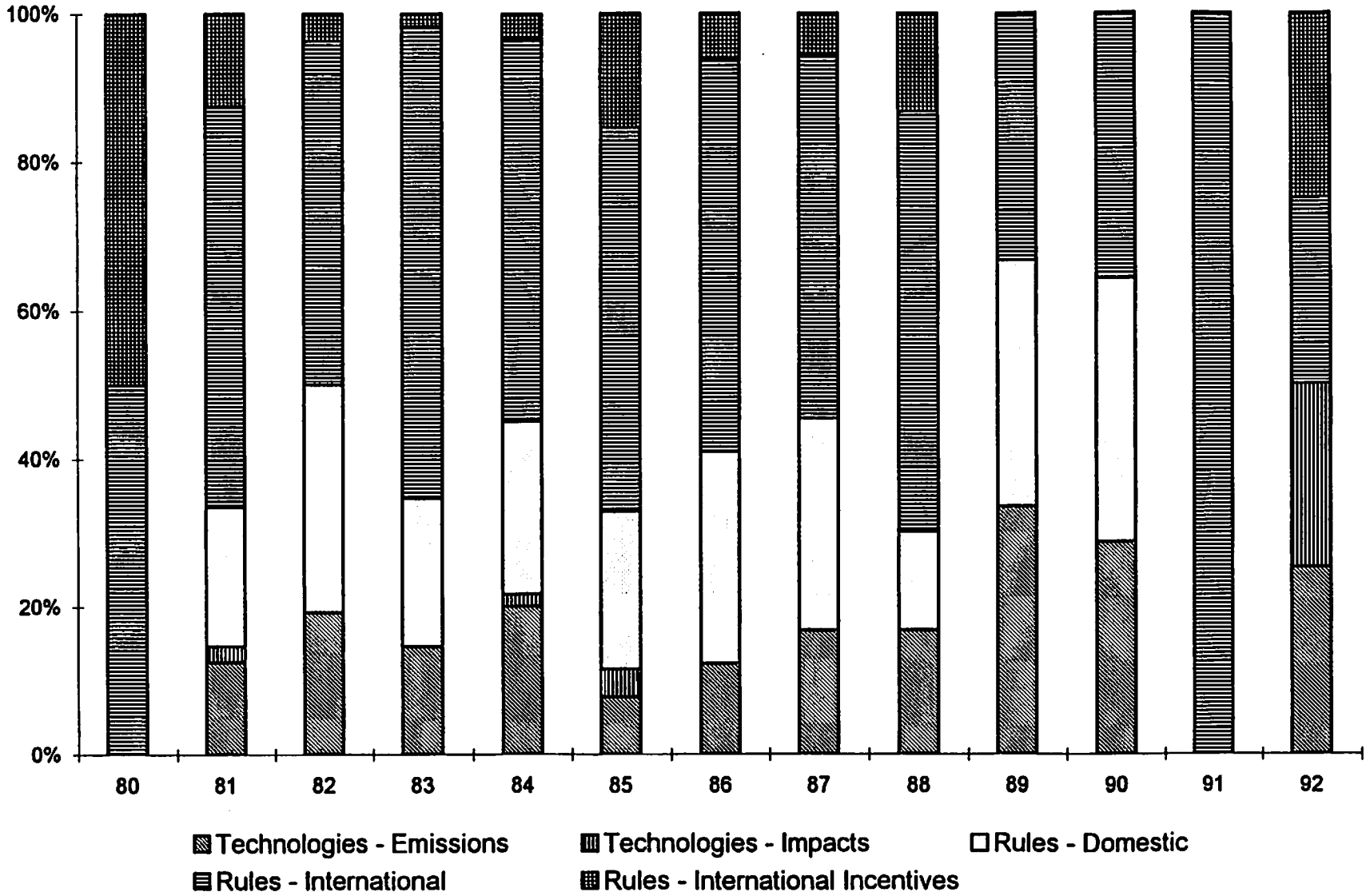


**Figure 6.** Percentage of *Globe and Mail* articles on "acid rain" in a given year that were either for action or against action, 1980-1992. The percentage of articles coded as neutral is not shown. Each article was assigned to only one category. This analysis was performed on all coded articles identified in Figure 1.

FIGURE 6
ACTION BIAS -- "ACID RAIN" -- CANADA

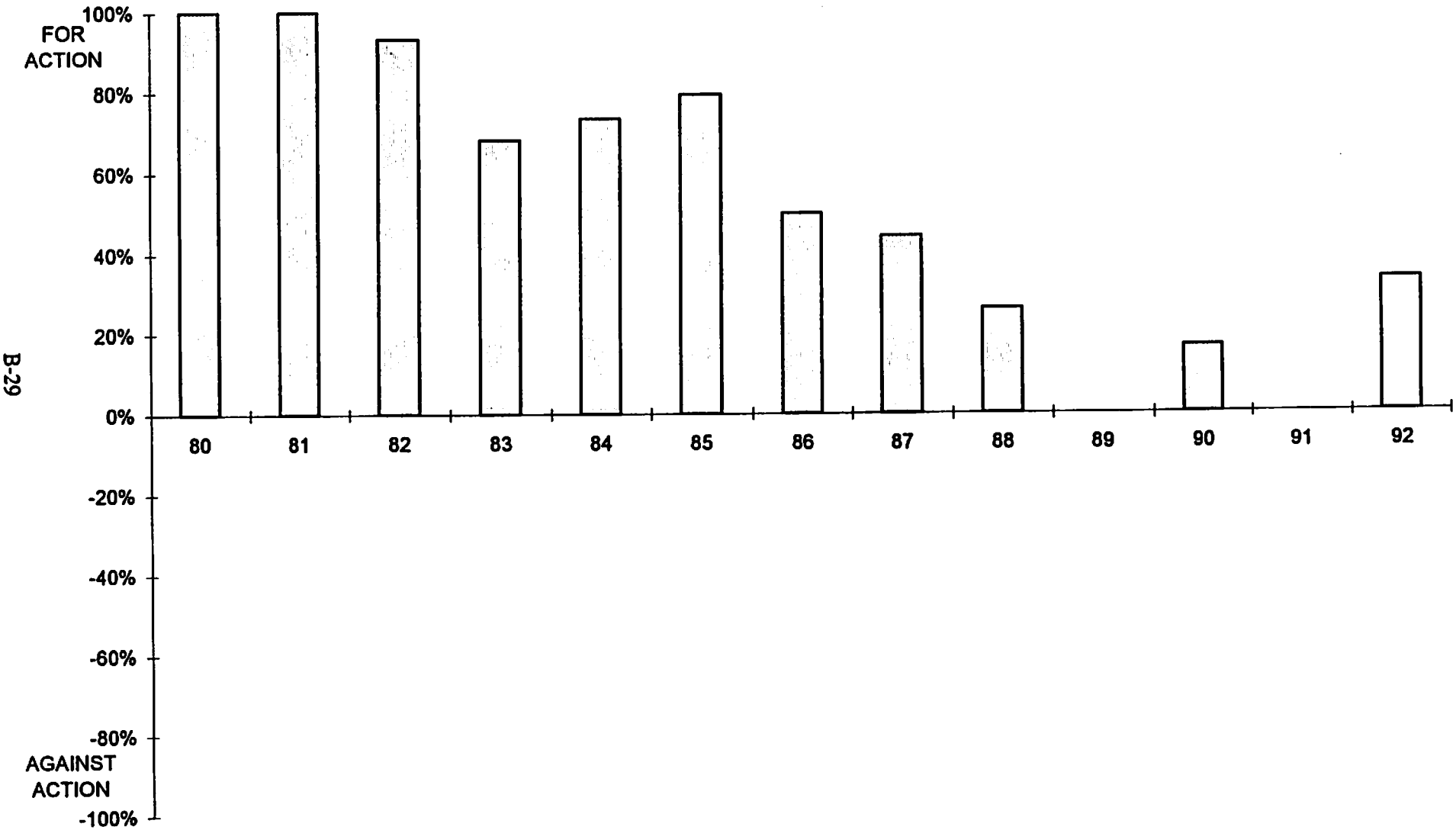


**Figure 7.** Percentage of *Globe and Mail* articles in a given year that showed bias towards particular actors, 1980-1992. Positive bias portrayed an actor in a positive light; negative bias in a negative light. The percentage of articles coded as showing no bias is not shown here. Each article was assigned to only two categories, one indicating positive and, second negative bias. This analysis was performed on all coded articles identified in Figure 1.

FIGURE 7
ACTOR BIAS -- "ACID RAIN" -- CANADA

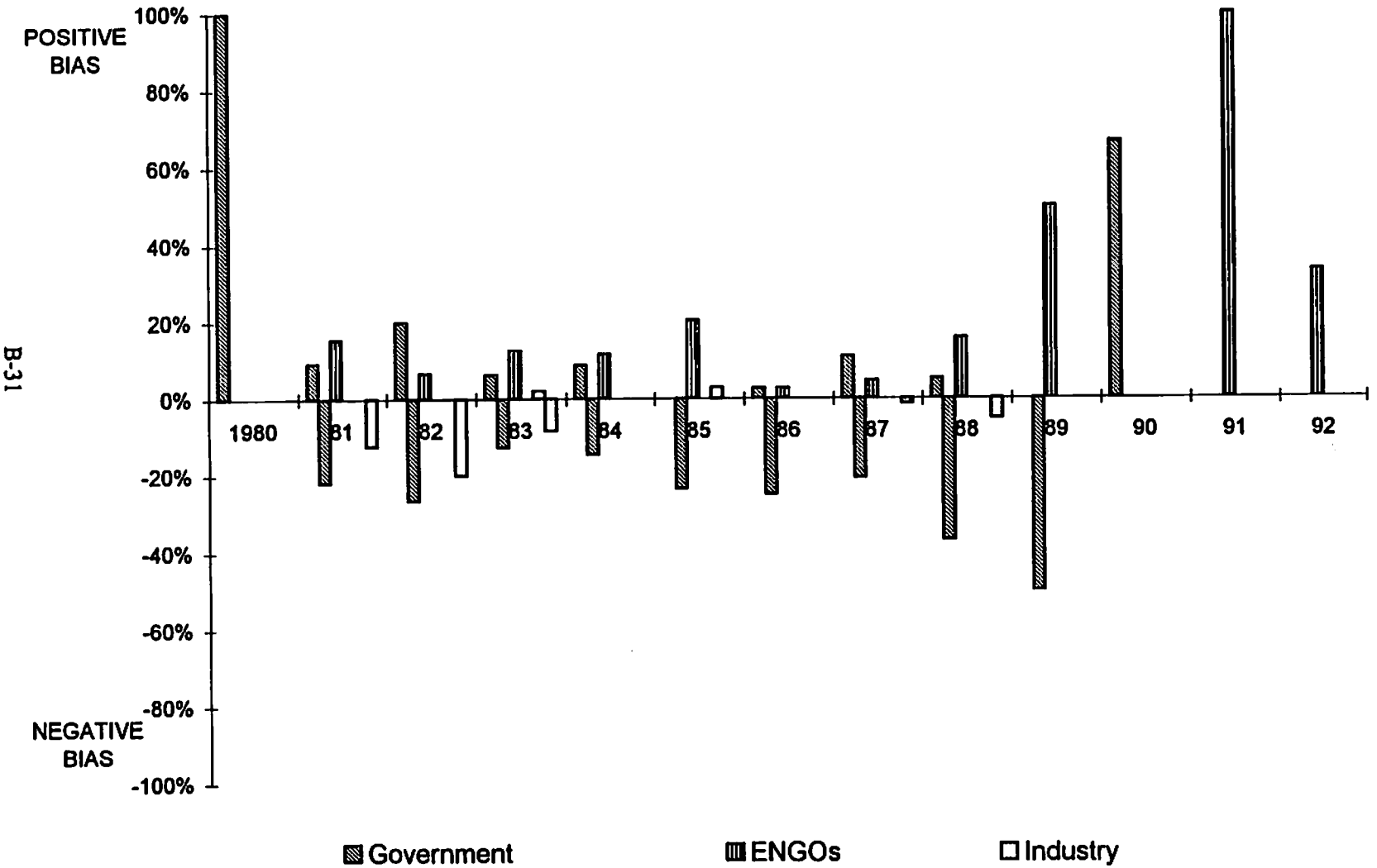
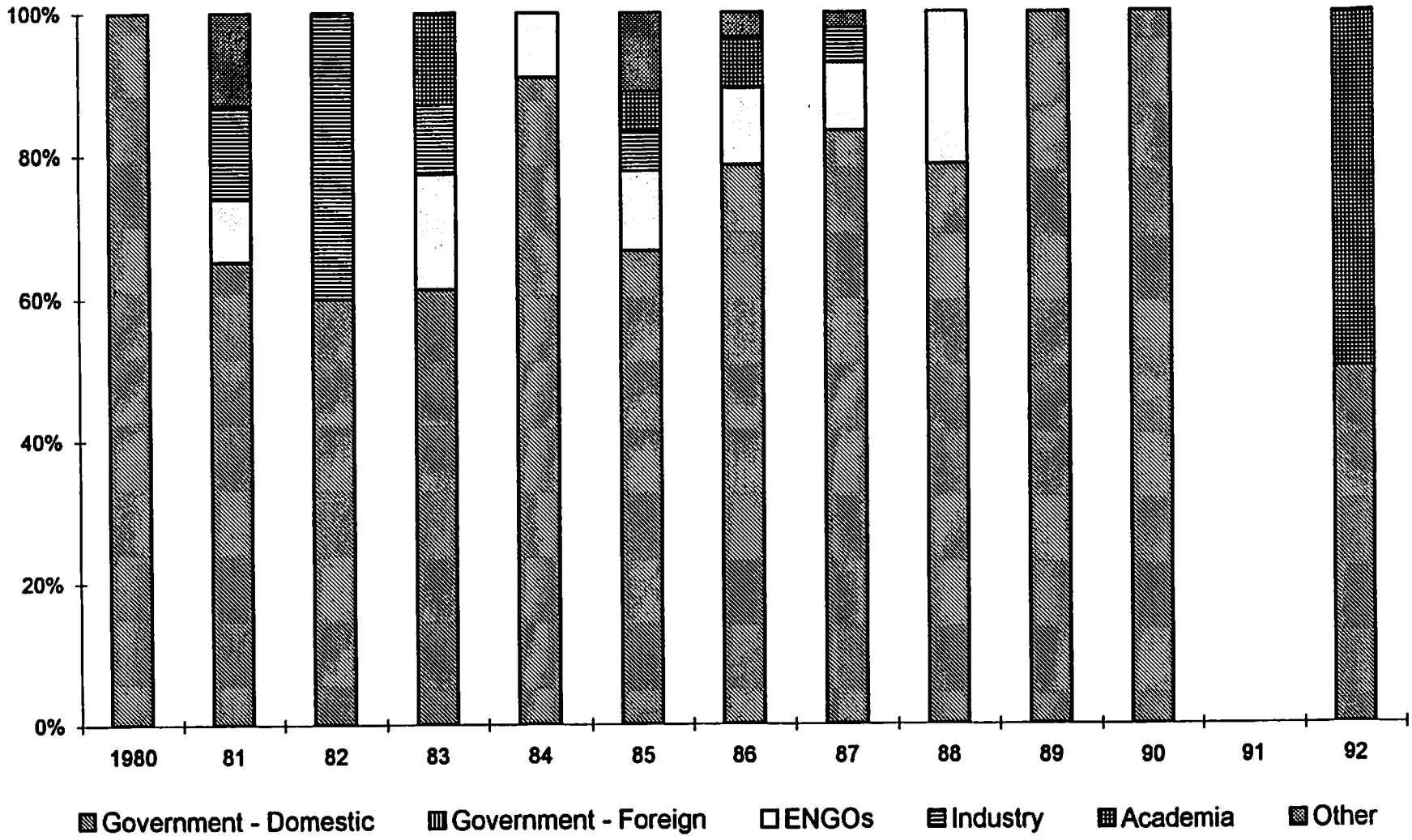


**Figure 8.** Percentage of news sources that dominated the framing and shaping of "acid rain" articles in the *Globe and Mail*, 1980-1992. Each article may have more than one source category coded. "Government - domestic" includes executive, legislative, and judiciary actors. The "government - foreign" category includes executive and legislative actors from other countries, primarily the United States. "ENGO" includes environmental non-governmental organizations and environmentalists. "Industry" includes emitter and impacted industries. This analysis was performed on a sample of articles identified in Figure 1.

FIGURE 8
NEWS SOURCES -- "ACID RAIN" -- CANADA



## Endnotes

1. Don Munton, University of Northern British Columbia, Canada; Michael Keating, University of Western Ontario, Canada; Adam Fenech, Canada Centre for Inland Waters, Canada.

2. This chapter is part of a study on *The Press and Global Environmental Change*, funded by International Business Machines Inc. organized by the Center for Science and International Affairs and the Shorenstein Barone Center on the Press, Politics, and Public Policy at the John F. Kennedy School of Government at Harvard University. The "IBM project" was associated with a larger project on *Social Learning in the Management of Global Environmental Risks*, financed by the John D. and Catherine T. MacArthur Foundation. The Social Learning Project, an eleven country, multiple-arena study, is examining how societies learn and respond to environmental issues of global importance, primarily climate change, stratospheric ozone depletion and acid rain.

3. The decision to relax a long-standing Inco control order was, it might be noted, one of four politically controversial decisions by the minister concerned, George McCague. Most of those involved recall that the key media stories at this time were provided by Ross Howard, then environment reporter for the *Toronto Star*. Howard recently observed that the story in 1978 had "colour... and all the elements": a recognizable "bad guy" (Inco), a "victim" (the Muskokas), "graphic elements" (i.e., dead fish), and "a minister on the ropes". Moreover, he estimated that many of the upper management of the *Toronto Star* had summer cottages in the Muskoka area (interview, 16 March 1995). One of Howard's key sources for his stories was a provincial government scientist, Tom Brydges, who shared research results with Howard on a confidential basis. Another source was Swedish reports on acid rain there, also supplied by the scientists he was talking to.

4. On the content analysis, see Section 3. Interviews specifically for the purposes of this chapter were conducted with seven media personnel (four of whom are former environmental reporters for *The Globe and Mail)*, six civil servants (five of whom are still in government), three former environment ministers, and two scientists (but no partridges in pear trees). All but one of these interviews were conducted by telephone in February and March 1995. Where comments were made on the record, individual sources will be cited. Background information was also utilized from earlier interviews on the subject of acid rain conducted by the lead author.

5. The material in this section is based on Rodney Dobell, et al., 1995.

6. In addition, there are two northern territories (soon to be three), whose status is evolving toward that of provinces. Territorial governments usually participate in federal-provincial consultations.

7. Throughout the 1980s, however, acid rain was undoubtedly the dominant environmental issue in Canada, outranking traditional water quality and ambient air quality problems. That it was so, however, is less of a departure from the norm than it might seem. While acid rain is usually conceived and categorized as an air pollution problem, that categorization is, in some respects, misleading. Its precursor gases are transported through the atmosphere, to be sure, but the most striking (and best documented) impacts of acid rain in Canada, as elsewhere, are on water bodies. And the acidification of lakes and streams, and the destruction of fisheries would seem to be more properly categorized as water pollution than as air pollution problems. Certainly the popular concerns acid rain evoked were more concerns about water bodies than the quality of the air, *per se*. It was thus perhaps less of an exception to the Canadian rule than it might seem.

8. Canadian public concern about acid rain was high. A United States Information Agency (USIA) poll in Canada in October 1984 asked: "How important is it that the problem of acid rain be overcome?" Three-quarters of those surveyed said it was "very important" and virtually all the rest said "quite important". Acid rain held a premier position amongst environmental issues in Canada throughout the 1980s, although it had slipped in relative importance by the early 1990s, behind such new issues as ozone depletion.

9. Some of the material in this section is based on Don Munton (1983-84).

10. USIA poll, October 1984.

11. The lure is evident though. Virtually all Canadian households have at least one television set; the average number of televisions in the early 1980s was 1.6 per household. (Kubas et al. 1981). Viewing is also heavy; the average person watched 191 minutes per day in the 1980s. Six out of ten households in Canada had cable television service by the 1980s, which usually significantly increases the selection of programmes available. More relevant here, a perhaps surprisingly high proportion - 94 percent - claim to watch one or more television news broadcasts per week. (The weekly average is over six).

12. On the other hand, Leo Bogart (1981) shows that circulation per household of United States daily newspapers has declined significantly in the postwar period. He states (but provides no sources or data) that circulation per household has also declined in Canada, the United Kingdom, and some other Western countries. He appears to be incorrect, at least with respect to recent years in Canada.

13. Various studies suggest that most people today use television more and believe television is more "important" than the printed press. See Bogart (1981) for a review of these studies. Volume III of the report of the Canadian Special Senate Committee on Mass Media (1971, 42) and Kubas (1981, 26) show television has for some time been regarded by more Canadians as 'most important' for international news. Television is also consistently regarded as less biased, more accurate, and more influential than newspapers (Kubas, section II, chap. 2; Bogart 1981). Carter and Greenberg (1965) on the other hand, suggest that newspapers are used more for news but trusted less while television is used less but trusted more.

14. On the casualness of TV watching, see Bogart (1981, 181-5). On the point that newspapers are used equally with television for some purposes, Canadian statistics show approximately equal numbers of voters use newspapers 'heavily' as use television 'heavily' during federal election campaigns (Clarke, Jenson, LeDuc, and Pammett 1979: 288, 416).

15. See, for example, McLeod, Becker, and Byrnes (1974;) Tipton, Haney and Baseheart (1975); and Benton and Frazier (1976).

16. See E. Katz et al. (1955). The process also, clearly, works in reverse as well. That is, those who are in positions of influence in the media respond to cues about the issues of importance to the mass public, issues that thus merit more coverage. The city editor of a major Canadian newspaper once told one of the authors of the present study that he (the editor) had decided acid rain had become a major public issue when his auto mechanic started talking about the problem.

17. See, for example, Bogart (1981, 58). Canadian evidence corroborates this point. A 1982 survey of members of the Canadian Institute of International Affairs, for example, supports this latter proposition (Munton, 1983-84). While by national standards these respondents were heavy media users, they were clearly more newspaper-oriented than television-oriented. Almost nine out of ten (87 percent) claimed to read a newspaper on a *daily* basis, eight (77 percent) listen to radio news, six watch television news,

and two read magazines. When asked how important each of these is to them as a reliable source of information, more rated the print media highly than the broadcast media. Nearly seven out of ten (69 percent) said newspapers were very important and six out of ten (62 percent) said magazines. By contrast, five out of ten (49 percent) said radio and four of ten (40 percent) said television were very important.

18. The average week day circulation of the *Globe* (both Toronto and national editions, including international sales) in 1993 was 311,355 copies; the Saturday edition, 351,000. Based on a survey which found that the average Globe issue was read by 3.4 people, its "readership circulation" was over 1 million (*Globe and Mail* Circulation, January 1995).

19. The Globe's readership, compared to that of Canadian newspaper readers in general, tends to be more middle-aged, better educated, more white collar, especially more professional and managerial, and higher income (1994 NADbank Survey, provided by Howard Hirshhorn of the Globe).

20. Fred Fletcher (1981, 9). Cohen (1963) suggested that American prestige papers generally influence how other media organizations report international affairs.

21. By way of illustration, guests commenting on current news for CTV's 'Canada AM' (the Canadian version of 'Good Morning America'), find their interviewers have that morning's copy of the *Globe and Mail* in front of them - just out of camera range, of course (personal observation of the authors).

22. The *Globe's* dominance of question period may have declined since 1993, as the two major opposition parties have been a Quebec-based, separatist party and a largely western-based populist party, both of which challenge traditional Ottawa-Toronto conceptions of the Canadian agenda and the public consensus.

23. Interviewed by Michael Keating. The *Globe* was the "key target" for senior civil servants trying to secure coverage of the governments' positions (Interview with Robert Slater, 7 March 1995).

24. While a 1988 survey of Canadian editors found 71 percent regarded the *Globe* the best Canadian newspaper for international news, and 51 percent said it was the best overall, Quebec editors were significantly less likely to do so (Soderlund et al. 1991, 5-18).

25. Dan Westell, *Globe* environment reporter, interview 16 February 1995.

26. *Toronto Star* reporters, for example, had "drummed into our heads" the question "What's it mean to Metro?" (Ross Howard interview, 16 March 1995).

27. This view has been expressed, and not in favorable terms, in the pages of the *Globe* itself by one of its regular columnists, Rick Salutin. The perception is shared and was articulated by two of our interviewees who currently work for the *Globe*.

28. The following reporters held the environment beat at the *Globe* on a full-time basis: Peter Whelan, 1971-77; Victor Malarek, 1977-79; Michael Keating, 1979-88; Craig McInnes, 1988-1990; Martin Mittelstaedt, 1990-1992; James Rusk, 1992-1993; Dan Westell, 1993-95.

29. *Infoglobe* is based on the final Toronto edition of the *Globe*; the available microfiche records, on the other hand, reflect articles appearing in the national edition. There are differences in content and format between the Toronto and the national editions of the *Globe*. When the two do not match there are readily imaginable difficulties in identifying and locating articles.

30. We used a table of randomly generated numbers from 1 to 586, and passed over numbers selected twice. (Note that this was not a "one-out-of-every-two" or "every-second-article" selection process.) The random selection thus produced 293 articles for coding. By chance, none of these appeared in the *Globe* prior to 1980.

The authors also identified and analyzed a second set of articles. The other set was a subjective selection conducted by Michael Keating, one of the authors of the present chapter and a former environmental reporter for the *Globe*. Keating chose those articles he felt represented the most important or salient pieces in the Canadian acid rain story. (This selection will be referred to below as the "Keating" set.) This selection produced 118 articles, including a few which go back to the early 1970s. The Keating set comprised about half the number of articles of the random selection, but there was some overlap of articles between the two selections. Generally, the two sets displayed similar patterns in content(as will be shown below), and thus the Keating set will be mentioned here only when there is a divergence.

31. The coding procedures employed can be summarized briefly. Each newspaper article or editorial identified on the topic was coded for the presence or absence of each particular subject and specific themes. When a given article referred to more than one subject (though generally they did not) and to more than a single theme (which often they did), the presence of each distinct subject or theme was coded. Second or multiple references to a specific subject or theme in a given article were not coded. This procedure may therefore have resulted in the under-representation statistically of some themes repeated frequently within articles. There was no weighting or articles, subjects, or themes according to context (e.g., editorial versus news story), location (e.g., front page versus back page), or other criteria. Each reference to a subject or theme was coded in terms of whether it was positive or supportive, neutral or negative or opposed. Ambiguous references were coded as neutral. (The neutral references are excluded from the results shown here to simplify presentation.) The overall coding rules and their application were developed and tested over a period of weeks by the author and the main coder using material from another year. The latter then worked with two additional coders, neither of whom was informed of the purposes of the study.

The articles were coded in random order rather than chronologically. This procedure was followed in order to reduce possible bias during the coding process. Coders' habits often evolve as the task progresses, and coders learn progressively more about the acid rain issue and its media coverage as they go along. If articles were coded in chronological order, it is possible for these "coder" effects to distort the coding process. Given that many of the patterns this project is looking for involve changes over time, it was therefore important to avoid introducing a bias or errors that would affect these temporal patterns. Hence the use of random order. The initial coding was checked by one of the investigators and also tested for intra-coder reliability by having the coder analyze certain selected articles twice, a few weeks apart. A sample of thirty articles were chosen to be representative of the complete set of articles with respect to the year of publication, length, field of news, and content. The results on the first and second round were then compared and checked to assess consistency, that is, whether they were coded the same way in both instances. The resulting coding reliability statistics, with an average reliability of .96, were judged satisfactory.

32. It should be noted that this is the only point in this analysis at which the full *InfoGlobe* data will be used. For subsequent analysis and figures the smaller random set is utilized.

33. For sake of comparison, the random set reached maximum coverage in 1987 with a lower peak in 1983. (See Figure 1.) The Keating set also peaked in 1987 but produced another slightly lower peak in 1980.

34. *Globe and Mail* coverage of water pollution issues peaked sharply in 1971, after an earlier, much lower peak in 1966-67. See Munton and Clow (1979). The pattern in the *Globe* closely resembled that in the Canadian media generally (as shown in the *Canadian Periodical Index*), and that in *The New York Times* and US weekly news magazines (Munton and Clow, p. 41). This pattern is consistent with the notion of an "issue attention cycle" proposed by Anthony Downs (1972).

35. The comments quoted in this paragraph are, respectively, those of: John Cruikshank (interview 9 February 1995), Robert Sheppard (interview 1 March 1995), and Colin McKenzie (interview 9 February 1995). All agreed on the validity of the basic "bell curve" pattern found in the acid rain coverage.

36. In this respect, they were largely incorrect. As they realized, the La Cloche Lakes, though close to Sudbury, are more upwind than downwind from the smelters. What they, and others, only later came to appreciate was the extent of acidic deposition from distant sources, largely American, to the southwest.

37. The *Globe* felt compelled to run, on the same page as the Beamish-Harvey contribution, excerpts from a speech by R. R. Saddington, an International Nickel Co. official. To Harvey, it was clear that "the *Globe* was very nervous" about what he and Beamish were claiming (interview 28 February 1995), and only agreed to print the essay on the condition that a response from Inco could run with it. (To the *Globe's* credit, the Beamish-Harvey piece had previously been turned down by two major Canadian magazines, one of which told the authors its editors had been reliably informed that there were lots of fish in the lakes.) The Inco statement published in the *Globe* ignored the question of acidified lakes, and instead defended the tall smokestack Inco was building; this is, it said, "a case of making full use of a proven method of dispersing sulphur dioxide-bearing smelter gas so that it will be rendered harmless. The new stack is not the final answer but it is today's answer. It is the best solution that we, or anyone else, can find within the limits of today's technology." The statement continued: "At the same time, we are continuing a program of intensive research to develop a method of processing our ores that will not involve the generation of sulphur dioxide."

This and the Beamish-Harvey article present an excellent juxtaposition of the issues in the early days of the acid rain debate in Canada. Although they did not use the phrase, "acid rain," Beamish and Harvey were revealing evidence that sulphur dioxide was leading to acidification of aquatic ecosystems and killing life. Saddington was repeating the philosophy of the day: that the solution to pollution was dilution in the air, and tall smokestacks were the technology of choice. What Inco, environmental officials and others who then supported the building of tall stacks in Europe and North America did not realize was that tall stacks actually enhance the formation of sulfuric acid in the air, and increase the long-range transport of air pollution.

38. Coverage in the *Globe* of the 1972 Stockholm Conference on the Human Environment appears to have made no mention of the pioneering Swedish acid rain study ("Air Pollution Across National Boundaries") prepared for the conference (Sweden, 1971). A summary of this report was published in *Ambio*, February 1972. One of the best short summaries of the Swedish scientific work leading up to this report is that of Holt-Jensen (1973).

39. On Liken's seminal work on acid rain, see Likens et al. (1972, 1979). The most prominent member of the University of Toronto group of researchers is the previously mentioned Harold Harvey (Beamish and Harvey 1972; Harvey and Whelpdale 1986). None of the early press reports on acid rain mention the real pioneer of acid rain research in Canada, ecologist Eville Gorham, whose studies in the 1950s put together most of the pieces of the puzzle (Gorham 1955; Herman and Gorham 1957; Gorham and Gordon 1960).

40. The lead on the 28 February 1977 Dotto article, however, was captured in its headline, which read: "Acid in snow, rain eats away at houses - and it's getting worse." The story began with: "Winter's snow and spring rains may be helping to eat away at your house or car, and they may be getting better at it year by year. The amount of acid in the rain and snow falling in eastern Canada and the United States has been increasing in recent years, and scientists believe that it can contribute to the weathering and corrosion of metals and buildings, as well as damaging the paint coatings that protect these surfaces". This was not the emphasis of the overall article, however. The matter of damage to buildings was, in later years, perhaps the least important issue in the public discussion about acid damage in Canada.

41. Danielle Wetherup. Interview 15 February 1995.

42. A 6 July 1993 story asked, rather plaintively: "Whatever happened to acid rain?"

43. In the Keating set, too, the emphasis was on the political elements. Given his selection criteria (and perhaps his personal interests), however, Keating's selection had a higher proportion of both science- and environment-oriented items than the random set. It should be noted here that the annual proportions shown in the graphs here could be misleading in the cases of years where there were few articles (i.e., earlier and later years). These proportions must be considered in the context of the number of articles in a given year.

44. The impact of US transboundary flows of acid rain was felt not only on the ecosystem but also on the political actors. "There was," as one Environment Canada official noted, "a feeling of outrage that the US was crapping on us." But "we were on the side of the angels. We had a duty to push the right cause" (Danielle Wetherup, interview 15 February 1995). To Ross Howard, once of the *Toronto Star* and then of the *Globe*, acid rain was "a classic Canada-US story." Indeed, he suggests it was perhaps the last of these stories, which seemed to become less frequent after the negotiation of the Canada-US free trade agreement in 1987 (interview, 16 March 1995).

45. Environment Canada decided early on in the battles over acid rain to put considerable effort into "communications". Compared to an expenditure for communications of about 2-3 percent of the overall budget for most issues, the acid rain communications budget typically amounted to about 10-15 percent of the allocation to this issue (Alex Manson, Environment Canada, interview 17 February 1995). These funds covered not only press releases and speeches for ministers and support for environmental group activities, but also briefing tours for journalists, advertisements, billboards, brochures, pamphlets, videos, a movie, and other items. Much effort was also expended to ensure the Canadian media had the basic facts they needed in their coverage and that people were available for reporters to check facts; this effort, one official suggests, is "why a lot of the furball stuff in the US media did not get picked up in Canada" (Manson interview, 17 February 1995).

46. Robert Slater, Environment Canada, interview, 7 March 1995.

47. Tom McMillan, interview, 23 October 1992.

48. For example, Michael Keating's byline appears on "only" 273 (or about 11 percent) of the approximately 2500 items (of all kinds) in the *Globe* mentioning acid rain during the period he was environment reporter between September 1979 and January 1988, the period of most intense coverage. A few more stories would have been written by Keating but not have received a byline.

49. A number of other non-government organizations acted as sources from time to time. They included the Federation of Ontario Naturalists, which helped organize a major citizens' forum on acid rain in 1979, Pollution Probe in Toronto and STOP (Society to Overcome Pollution) in Montreal. Dale Willows of

Elora was virtually a one-person campaign on forest dieback in Ontario. Willows approached the *Globe*, armed with a thick folder of scientific reports and newspaper and magazine clippings about tree dieback and her own photos of dying trees. She was convincing enough to get a reporter and photographer to tour parts of Ontario to do a story about damaged trees.

50. The results of the October 1984 USIA survey in Canada suggest most Canadians viewed the United States as largely responsible for acid rain. Fully 66 percent agreed that "US industries are the main cause of acid rain in Canada." When asked whether "the United States was doing more or less than its fair share" to clean up acid rain, 65 percent said it was doing less. In contrast, 55 percent said Canada was doing its fair share, although at the time, the Canadian federal and provincial governments had yet to begin reducing emissions.

## References

Beamish, R. and H. Harvey. 1972. Acidification of the La Cloche Mountain lakes, Ontario, and resulting fish mortalities. *Journal Fisheries Research Board of Canada* 29 (8): 1131-1143.

Benton, Marc and P. Jean Frazier. 1976. The agenda setting function of the mass media at three levels of information holding. *Communications Research* 3 (3): 261-74.

Bogart, Leo. 1981. *Press and public: who reads what, where, and why in American newspapers.* Hillsdale, NJ: Lawrence Erlbaum Associates.

Breen, Urban. 1977. The Canadian parliamentary question period with particular reference to external affairs. Unpublished MA thesis, Dalhousie University, Halifax, Canada

Canada, Senate. 1971. Report of the Special Senate Committee on Mass Media. *Good, bad or simply inevitable?* Volume III. Ottawa: Queen's Printer.

Carter, Richard F. and Bradley S. Greenberg. 1965. Newspapers and television: which do you believe? *Journalism Quarterly* 42:29-34.

Clarke, Harold, Jane Jenson, Lawrence LeDuc, and Jon H. Pammett. 1979. *Political choice in Canada.* Toronto: McGraw Hill-Ryerson.

Cohen, Bernard. 1963. *Press and foreign policy.* Princeton: Princeton University Press.

Dobell, Rodney, Ted Parsons, Adam Fenech, Heather Smith, and Don Munton. 1994. Investigate thoroughly, internationalize boldly, consult broadly, and walk softly: the evolution of global atmospheric issues in Canada. Unpublished.

Downs, Anthony. 1972. Up and down with ecology: the issue - attention cycle. *Public Interest* 28 (Summer): 38-50.

Fletcher, Fred. 1981. *The newspapers and public affairs.* Ottawa: Ministry of Supply and Services for the Royal Commission on Newspapers.

Gorham E. 1955. On the acidity and salinity of rain. *Geochimica et Cosmochimica Acta* 7:231-239.

Gorham E., and A.G. Gordon. 1960. Some effects of smelter pollution northeast of Falconbridge, Ontario. *Canadian Journal of Botany* 38:307-312.

Harvey, Harold H., and Douglas M. Whelpdale. 1986. On the prediction of acid precipitation events and their effects of fishes. *Water, Air and Soil Pollution* 30:579-586.

Herman, F.A., and E. Gorham. 1957. Total mineral material, acidity, sulphur, and nitrogen in rain and snow at Kentville, Nova Scotia. *Tellus* 9 (2): 180-183.

Holt-Jensen, Arild. 1973. Acid rain in Scandinavia. *Ecologist* 3 (10): 378-82.

Katz, Elihu, and Paul Lazarsfeld. 1995. *Personal influence.* Glencoe: Free Press.