The social construction of acid rain: The paper says it looks like rain today.

Christopher Lorne. Driscoll

University of Windsor

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by

Christopher L. Driscoll.

A Thesis
Submitted To The Faculty Of Graduate Studies And Research
Through The Department Of Sociology In Partial
Fulfilment Of The Requirements For The Degree Of
Master Of Arts At
The University Of Windsor.

Windsor, Ontario, Canada.

1995

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ABSTRACT.

This thesis has determined that there were a number of acid rain constructions presented to the public by the Ontario press. Although acid rain had been around since the 1890s, there had been no widespread knowledge among the general public until February 6, 1979, when the press considered the subject newsworthy.

The press constructed acid rain using familiar symbolism and imagery that would get the attention of the readership. However, due to the newsgathering techniques of journalists, more specifically their selection of sources, the constructions that were presented to the public were biased and incomplete. The perspectives of political sources of information were overrepresented while environmental organizations were hardly used by reporters.

This thesis also examined other influences on the print media's construction of acid rain, including political influences and geographical location of the newspapers.
DEDICATION.

This thesis is dedicated to my wife Christine and to my parents: Ruth and Ted.
ACKNOWLEDGEMENTS.

I would like to mention my most sincere appreciation to those responsible for the completion of this thesis. Starting with my committee chair, Dr. Alan Sears, whose continued support and high standards not only influenced this thesis, but myself as well. I would also like to thank the other members of my committee, Dr. Vito Signorile and Dr. Veronica Mogorody for their opinions and suggestions which improved the quality of this thesis.

I would like to thank Sue McGilveary of the Department of Sociology who was never too busy to offer assistance.

I would also like to thank my wife Christine, without whose support, patience and sacrifice this work would not have been possible.
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I: INTRODUCTION.

Rainfall in southern Ontario is seldom considered newsworthy. Occasionally it will become "front page news" when levels are too high or too low, but generally, rainfall is a taken for granted occurrence. Major changes in the amount of rainfall can have an immediate impact upon our way of life. The potential for such changes has been addressed by certain segments of our society. Flood ways and ditches have been constructed to deal with the effects of excess rainfall. During times of water shortages or drought water conservation measures are often put in place by many municipalities.

A potential change in the chemical composition of rainfall, as is the case with acid rain, has the potential to be just as devastating to society as a sudden change in the amount of rainfall. However these threats are presented to the public differently.

Human senses, on their own, are not able to detect the presence or the immediate effects of acid rain. This potential hazard is virtually invisible, detected only by the use of specialized testing apparatus. Noticeable effects of acid rain may take years to appear as they occur slowly over long periods of time. As a result, the public must rely on experts with specialized acid rain knowledge for information about this environmental hazard. Those experts, in turn, rely on the mass media to communicate and explain their findings to the general public.
This situation gives the mass media considerable power in formulating what Winter calls our common sense perspective. He argues that the taken for granted/common sense picture of the world in our heads is constructed by the news media. This common sense/taken for granted picture prevents the formation of other pictures (1992: xiv).

This perspective is supported by Ericson et al. (1987: 17), who claim that news is "framed so as to translate source's politically interested views into a seemingly apolitical, no-nonsense, common-sense view." It is a type of conventional wisdom, which is inherent in one's world view. Stuart Hall argues that such "preferred codes" as these:

...have been rendered invisible by the process of ideological masking and taken-for-granted...They seem to be, even to those who employ and manipulate them for the purposes of encoding, simply the sum of what we already know (Hall, 1978: 343-344).

In 1979, a stock of knowledge about acid rain had not yet been developed among the general public of Ontario. This lack of knowledge, combined with the relative invisibility of acid rain, enhanced the power of the media to create a common sense perspective on acid rain.

The result has been a number of acid rain constructions presented to the public. These different constructions are indicative of the different ideologies and philosophies which exist within our society. For example, at one extreme, there are those who claim that economic concerns should be given priority over stopping acid rain. At the other extreme there
are those who feel that acid rain is the greatest threat to ever face humanity and should be stopped, no matter what the cost. There are also those who fall somewhere between the two extremes, such as the cottagers who feel that acid rain will lower the value of their investments and affect the quality of their lives or those who feel that there is not enough scientific data available on acid rain to justify the expense of cleaning up the problem.

Although a number of different acid rain constructions were presented to the public, the press did not give each construction the same amount of attention or coverage. This is likely due to various newsgathering techniques and assorted influences on the press.

This thesis will point out the different acid rain constructions which have been presented by the press. An assortment of issues which have influenced the selection of symbolism and imagery by those responsible for the various constructions will also be examined. Three themes will be used to explain the issues: the symbolic creation of acid rain; how the environment became news; and the non-neutrality of the media.

The original intention of this thesis was to examine the social construction of acid rain by the press. It was expected that there would be a very small assortment of acid rain constructions. It was also assumed that the constructions would present a pro-business perspective towards the problem
due to the potential influences of big business on the newspaper industry. As research progressed, earlier assumptions were not fully supported. Although there was a larger variety of acid rain constructions than expected, certain ones appeared to be presented more often than others. This uneven distribution may suggest that there are various influences which have determined the print media's common sense perspectives which have been presented to the public.
II: ACID RAIN.

The term "acid rain" is used throughout this thesis; however, it has become a misleading shorthand version of acid precipitation. Acid precipitation includes the dry fallout of oxides of sulphur and nitrogen in the form of dry gases and minute aerosol particles that remain suspended in the atmosphere, as well as the wet deposition of acids which are in solution or suspended in fog, on raindrops, snowflakes, or hail (Park, 1987: 2). For the sake of convenience, this thesis will use the term "acid rain" as a representation of both wet and dry acid precipitation deposition.

Natural, unpolluted rainfall is slightly acidic, with a minimum pH of 5.6. This acidity is the result of carbon dioxide (a natural component of air) combining with rain to produce a weak solution of carbonic acid. Nature's complex arrangement of checks and balances has always buffered this slight acidity. Mild bases such as the carbonates that exist in limestone rocks, are able to neutralize the acidic effect (Weller, 1980: 14).

pH is the measure of acidity or alkalinity of a substance and is indicated by a number from 1 to 14 on a logarithmic scale. A pH of 7 is neutral, whereas a pH of 14 is extremely basic (or alkaline) and a pH of 1 is extremely acidic. Due to the logarithmic nature of the scale, a pH of 4 is ten times more acidic than a pH of 5, and 100 times more acidic than a pH of 6 (Weller, 1980: 13). The 5.6 pH level of unpolluted
precipitation is slightly more acidic than the neutral level of 7.

It has been demonstrated that the presence of sulphur and nitrogen oxides in the atmosphere contributes to the acidification of precipitation. Park (1987: 3) points out that these oxides occur naturally in environmental cycles and ultimately have natural sources. However, these levels have increased due to coal-fired power stations and smelters which are major sources of sulphur dioxide (SO2) and automobile exhaust which is the main source of nitrogen oxides (NOx).

Sulphur dioxide is formed by oxidation of the sulphur present in fossil fuels. Nitrogen oxides are formed at every combustion in which high temperatures arise. Sulphur dioxide and nitrogen oxides can be transformed in the atmosphere into components that are soluble in water, such as cloud water and rain drops, forming at the same time sulphuric acid and nitric acid (Weller, 1980: 14).

Acid rain has been the concern of environmental pressure groups for many years (McCormick, 1989; Hansen, 1990). This environmental issue, far from being a recent discovery, has a long history in scientific circles, even before public pressure groups had been formed to address environmental problems. There has been speculation about airborne acid pollution since the eighteenth century. The speculation appears to have begun with the onset of the industrial revolution, and was first described by Robert Angus Smith in
1852. In 1872, Smith's book, *Air and Rain*, linked coal burning in Britain to acid rain. By the turn of the century, fish populations were declining in Norway, although the cause was not known at the time. It was not until the 1950s, and 1960s, that the acid rain problem was fully researched and reported in Norway and Sweden (Forster, 1993: xi).

In the early 1970s, a Swedish report, the result of 20 years of research into air pollution blown into Scandinavia from the factories and cities of Europe and Britain, cited massive fish kills and a death toll of hundreds of lakes. The report also pointed to crop and forest damage, property corrosion and health implications. According to Howard (1982) the report concluded that acid rain meant an environmental disaster for Sweden in the near future. The report added

...a similar situation might possibly exist within certain regions of Canada and the north eastern parts of the USA. A detailed study of the likelihood of such a matter is a matter of urgency (Howard, 1982: 14).

Most of the research on acid rain continued to come from Sweden until the mid-1970s. In North America there was little attention paid to the Swedish alarm. For example, in Canada, at least one academic scientist studying the acid rain situation sounded his own warning, only to be largely rebuffed and ignored. Harold Harvey's findings were rejected by three Canadian mass circulation publications. One publication denied the accuracy of Harvey's reports because a staffer once "caught a fish in that area." That area was Killarney Park, and some of the lakes there had been dead for a decade. Harvey
said "it's almost as if government scientists and decision-makers didn't want to have to start facing reality" (Howard, 1982: 15).

At the time, acid rain was thought to be just a local problem, affecting areas in the vicinity of large sulphur dioxide polluters, such as in the Sudbury and Wawa areas. It was not until the late 1970s, that it was realized that large areas of North America were also at risk.

A 1978 Ontario government study confirmed what the Swedish studies had predicted. A quick survey of 200 lakes in the Killarney region showed that 40 were dead and 100 more were on the critical list. At the time, this news only made the deep-inside pages of a few newspapers (Howard, 1982: 15).

One of the reasons for the delay in discovering the severity of the problem is noted by Dr. Harold Harvey of the University of Toronto,

It has been a rather difficult environmental problem to deal with because it is a rather innocuous one. You don't find, for example, large numbers of dead fish and dying fish lying belly up or rotting on the beach. There is no muss, there is no fuss, there is no smell. The fish quietly go extinct. It is the fresh water analogue of the Silent Spring. They simply fail to reproduce and become less and less abundant, older and older, until they die out. Consequently, it has a very low profile. It has been hard to convince anybody that there is a problem (as cited in Curran, 1979: 4).

In February 1979, acid rain finally made the headlines in Canada. The headlines were the result of then Provincial Minister of the Environment, Harry Parrott, announcing that "48,000 lakes in Ontario were seriously endangered by acid
precipitation" (Weller, 1980: 65).

Throughout 1979, there were 18 sessions of public hearings on acid rain by a committee of the Ontario legislature. During the hearings the ramifications of acid rain were sketched out by cautious government officials and highly critical academics and environmentalists: the extinction of fish species, the acidification of the soil and the threat to vegetation (Howard, 1982: 15).
III: LITERATURE REVIEW.

SYMBOLIC CONSTRUCTION OF RISK.

ACID RAIN AND RISK.

In an attempt to portray acid rain as an environmental threat, it must be remembered that what is considered risky is highly subjective. Unlike animals, human beings cannot rely solely on their instinct to determine what constitutes a threat and what does not. Our knowledge, values, beliefs, and our ways of responding to uncertainties influence what we consider risky. As a result there are no value-free processes for choosing between risky alternatives. The search for an "objective method" is doomed to failure and may blind the researchers to the value laden assumptions they are making (Douglas, 1982: 188).

When dealing with a threat one must rely on preconceived notions which have been influenced by beliefs and values. If acid rain is to be considered a major environmental hazard by the mainstream public, the media must do more than simply state the known scientific facts. Powerful and negative symbolic means must be used in order to "drive the point home". Acid rain has to be portrayed as a grave threat to the survival of humanity rather than just a problem which affects a small number of people in a local community. It must be made clear to the public that stopping the devastation is worth the necessary sacrifices and adjustments to the habits which contribute to this environmental hazard.
LANGUAGE AND SYMBOLS.

Language is a major tool used by the media to communicate the risks and potential hazards of acid rain. Whether written or spoken, language allows symbols to be constructed for any object in the world. Patterns of these denotative symbols can promptly symbolize the very different but analogous, configurations of denoted things.

Through the use of language, human beings are able to speak of an infinite number of matters which are not present in the face-to-face situations, including events which have yet to, or may never, occur in the future; an entire world can be actualized at any moment. It has advanced from its original face to face origins to a system of communication that has the capacity to pass on meanings that are not direct expressions of subjectivity "here and now". This capacity is shared with other sign systems, but the immense variety and complexity of language make it much more readily detachable from the here-and-now situation than any other system. Furthermore, language provides the means for objectifying new experiences, allowing their incorporation into the already existing stock of knowledge. In this way, language is capable of becoming the objective repository of vast accumulations of meaning and experience, which it can then preserve in time and transmit to following generations (Berger and Luckmann, 1966: 37).

Language is a powerful, supple and adaptable form of symbolic communication. Its power and versatility are the
result of the components of language not being dependent on other relations. For example, we are able to name two items, and place the name of the relation between them. It is the relation that holds the two items together. In instances where the relation is not symmetrical, the word-order and grammatical forms (case, mood, tense, etc.) of the words can symbolize its direction (Langer 1957: 74).

Language allows a number of concepts to be developed. It also allows the relationship between various concepts to be established, thereby avoiding confusion. It is a symbolic form of communication that allows us to express both terms and relationships more economically than pictures, gestures, or mnemonic signs (Langer 1957: 74).

SYMBOLS AND THE CONSTRUCTION OF RISK.

Symbols, such as words, allow a threat, such as acid rain, to be subjectively constructed for an audience without the threat being present. The audience may not be aware of, or even near the hazard. A potential threat is able to be reconstructed using symbols even though they are not exact substitutes for objects,

... but are vehicles for the conception of objects. To conceive of a thing or a situation is not the same as to "react toward it" overtly, or to be aware of its presence. In talking about things we have conceptions of them, not about the things themselves; and it is the conceptions, not the things, that symbols directly "mean" (Langer, 1957: 60).

Unlike signs, symbols do not announce the presence of objects to the intended audience, rather, symbols allow people to
acquire a conception of objects.

According to Langer (1957) a name is the simplest type of symbol. It is directly associated with a conception, and employed by a person to realize the conception. However, to only treat a name as a "conceptual sign," an artificial sign which announces the presence of a certain idea, misses the relation of conceptions to the concrete world. This relation is so close and important that it enters into the very structure of 'names.' "A name, above all, denotes something" (Langer, 1957: 63).

The relationship between a symbol and object is often represented by "S denotes O," although it may appear as a simple two termed relationship, it is much more complicated because S is coupled, for a certain subject, with a conception that fits O. (Langer, 1957: 64). For example, acid rain may signify rainfall with a pH lower than 5.6, because there is a direct relationship between the two. However this relationship is too complicated to be represented by only a name.

Denotation is the complex relationship which a name has to an object which bears it. But connotation is the more direct relationship of the name, or symbol, to its associated concept. The connotation remains with the symbol when the object of its denotation is neither present nor looked for. We are able to think about the object without reacting to it overtly (Langer, 1957: 64).

Connotations are usually fixed upon a word, originally,
by its application to certain things, even though the properties are not well known. Using the trans-boundary nature of acid rain as an example, the amount of damage that takes place in Canada resulting from acid rain produced in the United States is not exactly known, nor is the damage in the United States resulting from Canadian produced acid rain. Yet the blame for the problem, which is part of the connotation of acid rain, has often been placed on the United States by the Ontario press.

On occasion, incorrect connotations can be fixed upon certain words. This makes it possible to be mistaken about the connotation when we use the term as a vehicle of thought. For example, the connotation fixed upon the chemical DDT was that of a useful tool for farmers to increase their yields. It was not until the harmful side effects of using DDT became known, that this positive connotation was replaced with a much more sinister one. It is this potential for error that makes it impossible to guarantee that the very dangers people seek to avoid are those that will actually harm them the most (Douglas and Wildavsky, 1982: 4).

The symbolic creation of acid rain forms a major component of this thesis. However any symbol on its own is often not very meaningful. Symbols are used with grammatical structure in order to make sense. Certain principles of grammar complement the vocabulary of symbols. In order to make sense out of a sentence one must know which words are verbs
and which are nouns; the verbs which are active or passive; who is the person and the number they express and where the verb stands in the sentence.

Grammatical structure, states Langer (1957: 68),

...ties together several symbols, each with at least a fragmentary connotation of its own, to make one complex term whose meaning is a special constellation of all the connotations involved. What the special constellation is, depends on the syntactical relations within the complex symbol or proposition.

Propositions are able to fit facts for basically two reasons. The first is that the proposition contains names for the things and the actions involved. Secondly, it combines them in a pattern analogous, somehow to the pattern in which the named objects are "in fact" combined. Langer (1957: 68), compares the unity of a proposition with the sort of unity that belongs to a picture, which presents one scene, no matter how many items may be distinguishable within it.

The creation of acid rain as an environmental hazard, consists of many different images for different people. Although the same images may not be shared by all, it is the relation of images which is most important in forming a conception of acid rain. Some people may have a more detailed understanding, but overall there is a basic conception shared by those who speak of the problem.

The conception of acid rain is not fixed upon the actual acidic precipitation falling from the sky, it is something that exists entirely in the minds of people. The definition of an object is not "written in stone". Different groups often
have different definitions of the same object, for example, a
tree means different things to an ecologist than it does to a
logger. The conception of an object can change while the
actual object remains constant. It is also possible that an
object could change, but its image remain the same.

The common use of an object, which has already been
determined socially, defines the object. As our use for the
object changes, so does our definition of it. This view alters
the nature of the world that humans act in. Instead of objects
"turning us on", we define them, we use them to achieve our
goals in a situation, and we change them to meet our needs.

Our definitions of the world remain highly volatile, as
they are influenced by others and can change at any time
through interaction (Charon, 1989: 39). "The meaning of a
thing for a person grows out of the ways in which other
persons act toward the person with regard to the thing"
(Blumer, 1969: 3). Out of a process of mutual indications
common social objects emerge, objects that have the same
meaning for a given set of people, are seen in the same manner
by them.

It is the assigned meanings of objects that humans react
to in their environment rather than to the possible objective
dangers presented by such objects. Although they may exist in
physical forms, it is through symbolism, language and social
interaction that humans are able to isolate, classify,
interpret, and assign meanings to such objects. For example,
if acid rain were one of the greatest threats to the long term survival of human beings on this planet, it is not likely that steps would be taken to alleviate the risk, if the public was not informed of the serious implications. The print media's construction of acid rain plays a significant role in informing the public on the potential seriousness of the hazard.

ACID RAIN AS AN ENVIRONMENTAL ISSUE.

There is a distinction between environmental accidents or disasters and environmental issues, such as acid rain. Environmental accidents or disasters tend to be sudden and unexpected. Their visible nature forces them into the media agenda. Environmental issues are more apt to involve long term and often subtle effects. They usually only become known when someone speaks up and makes claims about them. Because they are less obvious, environmental issues are usually constructed more subjectively than environmental accidents or disasters.

Environmental issues are not constructed into social problems at some point in society or as the result of public opinion. Rather, there are particular public arenas in which such issues are framed and grow (Hilgartner and Bosk, 1988: 55). Understanding media roles in the construction of the environment and environmental issues as social problems is therefore not primarily a question of determining whether media coverage influences public opinion, or public opinion
influences media coverage. Rather, it becomes a question of mapping the dynamic and interactive elaboration of issues as they are articulated, often in parallel, in different fora of meaning creation. Such fora are hierarchically ordered, and the "strength" of their interlinkages vary (Hansen, 1991: 449). Thus, it is likely that an official political forum will be considered a more reliable and respectable source of information, with respect to acid rain issues, than a local grassroots organization trying to raise national awareness.

THE MEDIA AND CREATING SYMBOLIC RISK.

The public reaction to the various presentations of meaning offered in various fora is uncertain. Although there are a number of studies about the actual effects of reportorial information-processing on readers, this thesis is more concerned with the media's construction of the message, than with the public's reaction to that message. Previous research supports the claim that the media should play an important role in the construction of acid rain. Schoenfeld et al. (1979: 30) point out that the importance of the media in "constructing reality" has been validated by other studies. Lang and Lang (1959: 77) claim that "the mass media structure issues and personalities." Gerbner (1972: 158) makes a similar claim stating that the media are "cultivating images of society." McQuail emphasizes indirect influence, such that the press presents
....a consistent picture of the social world which may lead the audience to adopt this version of reality, a reality of 'fact' and of normal values and expectations (1977: 72).

Support for the claim that the media are able to socially construct reality is also provided by Gurevitch and Blumler (1977: 71) who emphasize the ability of the press "To create images of social reality by which the public may structure their views of the world."

The media have the potential to construct not just one, but several "acid rain realities." Westergaard (1977: 110) claims that the press is seen as part of a machinery "by which rival pressures and policy proposals are expressed, made known, brought to arbitration." The result is the potential for a number of different pressures and policies influencing various acid rain constructions.

Chaney (1977: 450) argues that society is humanly constructed, and, through communication, meaningful reality is created and sustained. More specifically, the press can produce definitions of situations and socially constructed realities. Weiss (1968: 77), suggests that "The media do not merely transmit messages, but structure 'reality' by selecting, emphasizing and interpreting events." The media is more than a passive information provider to the public. It has the power to influence and control the information that it does and does not present.

As well as creating certain social realities, the media is also able to influence the evaluation of the existing
social reality. With respect to environmental issues, news columns could reinforce or denigrate the concepts that positive environmental claims-makers intend to impart when they use environmental terms (Schonfeld et al., 1979: 39).

The detail and complexity of a social construction presented to the public is also influenced by the media. For example, in the 1980s environmental issues became more complex as it was realized that environmental subjects were multifaceted, involving not just technical information, but also legal, financial, political and social considerations. An environmental reporter once described "a classic environmental story" as a "business-medical-scientific-economic-social pollution story (Schonfeld et al, 1979: 52)." Much of what needed to be covered affected human health and involved evaluating costs, benefits and government regulation. Moreover, environmental concerns usually involved a long and tenuous string of interrelated concerns that all had an impact on people's lives.

Friedman (1991: 21), points out that unlike many other topics, the environment as a subject of public discourse, was plagued by not only enormous complexity, but also a great deal of scientific uncertainty. These problems were exacerbated by journalism's penchant for a hard news peg and short deadlines, as well as the lack of adequate sources and the tendency toward crisis reporting.

Friedman (1991: 23) criticizes the media for failing to
provide a greater perspective, particularly for stories that dealt with environmental risk issues. Using Bhopal and Chernobyl as examples, she points out that Bhopal was portrayed as the kind of event that people most dread, with little context and with certain facts omitted. American reporters did not place the Bhopal event in the framework of larger issues that surrounded the plant. Such issues included the need for jobs in the developing world, the need for food in those same countries, and the role that chemical pesticides and fertilizers play in the world agricultural economy.

Coverage of Chernobyl, besides lacking in-depth examination of major radiation factors, also lacked the background on why the Soviet Union was building so many nuclear reactors, why this particular design had been chosen, how power needs affected the Soviet economy, and finally the politics and militarization of nuclear power in Europe. The event itself takes precedence, while perspective and follow-up are lost in the process of only reporting the news.

The same lack of in-depth reporting was noted by Gamson and Modigliani (1989: 22) in their media sample taken two weeks after the Three Mile Island accident (TMI). They noted that the media were less explicit in their framing of nuclear power as such and instead tended to focus on two questions, the first being: What is it like to live next to TMI? Since there are a number of other nuclear reactors in the U.S. the question implied here was: What is it like to be living near
a nuclear reactor that has had an accident? The second question was; Is the situation at TMI under control? Again, there is a more general story, especially as the immediate TMI crisis subsides: Is this technology under control?

According to Dennis (1991: 61) there is a feeling among environmentalists and environmental scientists that many environmental stories are so extraordinarily complex that the media, which hate ambiguity, may not be able to cover the territory any other way than superficially. An essential problem is the lack of expert training and expertise among media people. Reporters without background knowledge on a subject can easily be influenced on a topic by special interests or be put off by those they consider shrill or impatient about news coverage of their most important concern.

Dennis (1991: 62) claims that in the end, the news media really do seem to cover those topics and issues that interest the public. However, there are some critics who point out that there may be a great difference between what interests the public and the public interest, but nonetheless, the only stories that have a chance of getting reliable and regular coverage are the stories that the media has determined to be salient and pertinent to people in their daily (or fantasy) lives. Thus those who are interested and care about seeing quality environment coverage, such as those involved with the environmental movement, covering the environment for the media, or simply members of the public with a desire to know
more about the topic, must grapple with the public attention and memory span. They must also become experts in persuasive communication, at finding angles and connections between and among stories that will ignite public interest and inspire a desire and demand for more information.

**THE ENVIRONMENT BECOMES NEWS.**

**FLOW OF THE NEWS.**

This thesis will study the influences on the print media's symbolic creation and definition of acid rain using a constructionist perspective. The constructionist model shifts from the rather simplistic view of the media as merely an environmental stimulus or in other words, a separate entity which has the potential to influence society. Rather, the media is considered a dynamic entity which maintains a symbiotic relationship with the cultural systems which have constructed and maintained it. Both the media and cultural systems contribute to, and are influenced by, each other. The constructionist model considers the media to be part of the cultural system, worthy of study and analysis in its own right. The constructionist paradigm is reflected in analysis of the role of mass media frames in shaping political discourse and in reproducing the dominant political culture (Tuchman, 1978: 2).

The constructionist model reframes the relationship between media and public opinion as the interplay between two
interacting systems. On the one hand, there is a system of media discourse that frames events and presents information always in some context of meaning. On the other hand, there is the public interacting of individuals who approach media discourse in an active way, using it to construct their own personal meanings about public events and issues (Gamson, 1988: 165). This thesis will focus mainly on the examination of the system of media discourse with regard to acid rain.

The second system of the constructionist theory, the public interaction of individuals who are involved in media discourse, will not be focused upon. However such a study would likely complement the work done in this thesis. Any study of the public interaction of the audience who approach media discourse would have to consider the interpretation and perception of the message presented to them by the media. Interpretation of the message depends on, among other things, the different values and beliefs of the reader and interaction with others who have already read the article. The way that readers are sensitized to the presentation also influences how the message is interpreted.

Such sensitivity and responsiveness differ not only between people in the given audience but more importantly in given people through time. People are caught up in a world of moving events, which foster new objects of preoccupation, new lines of judgement, and new orientation of feeling. As issues arise or subside, as new interests emerge or recede, as sophistication replaces naivety, or in many other ways, people shift in their sensitivity to presentations and in their interpretations of them (Blumer, 1969: 185).

Several studies have attempted to uncover links between
public opinion on the environment and media coverage of environmental issues. In one such study, Gamson and Modigliani (1989) explored the relationship between media discourse and public opinion. Their paper explored the relationship by analyzing the discourse on nuclear power in four general audience media: television news coverage, newsmagazine accounts, editorial cartoons, and syndicated opinion columns. The analysis traced the careers of different interpretive packages on nuclear power from 1945 to the present, including nuclear reactor accidents at Three Mile Island and Chernobyl.

The researchers concluded that "public opinion about nuclear power can be understood only by rooting it in an issue culture that is reflected and shaped by general audience media" (Gamson and Modigliani, 1989: 35). They see the audience as actively using media discourse to construct meaning, rather than just being passive objects on which the media work their magic. Swidler (1986: 273) suggests that we think of culture "as a 'tool kit' of symbols, stories, rituals, and worldviews, which people may use in varying configurations to solve different kinds of problems."

Hansen (1991: 444) notes that several studies have found agenda setting effects between media coverage and public opinion, on environmental issues. An early study of Funkhouser (1973) examined the relationship between the media prominence of certain issues and their prominence in opinion polls. The study found that on the whole, the rank order of issues in
media coverage and the importance ascribed to those issues in opinion polls, including environmental concern, matched each other rather well.

However, Funkhouser (1973: 74), goes on to cast doubt on whether it is possible, from this "match", to make any inferences about the impact of media coverage on public opinion. Specifically, he argues that the match may simply be an indication that everyone engages in "indirect content analysis", and that the "concern" measured by opinion polls is no more than an indication of people's general awareness of what the media present as issues for public concern.

In a similar study Atwater et al. (1985: 397) found weak, but positive, correlations between the media prominence of six environmental issues and the relative importance assigned to those issues by the public. This finding supported Funkhouser's point about the difference between "awareness of media agendas" and "actual public concern about environmental issues". Atwater and his colleagues found strong evidence of public awareness of what the media agenda on the six issues were.

Lowe and Rudwig (1986) conducted a study in which they reviewed wide-ranging samples of evidence on public opinion and attitudes on environmental matters. They point out that longitudinal and more comprehensive surveys have shown a relative stability and ubiquity of environmental concern. They suggest that the fluctuations registered by more superficial
opinion polls may merely reflect "the immediately prevailing preoccupations of the mass media" (Lowe and Rudwig, 1986: 514).

Brosius and Kepplinger (1990: 205), found, in a complex agenda-setting study in Germany, evidence of relatively strong effects of the issues of energy supply and environmental protection on public opinion. However, they point out that one of the complexities in interpreting the data from their research was the different agenda-setting time-scales applied to the development of general perspectives such as environmental protection, compared with the awareness of specific events within a wider issue (the example they use is the Chernobyl accident as a specific event within the wider issue of "energy supply").

In contrast, another agenda-setting study, by Protes et al. (1987: 179), found little evidence of any agenda-setting effects of toxic waste coverage on public opinion. However, an interesting finding of the study showed that such reporting had significantly influenced the attitudes of policy makers. This provides a brief glimpse into the elaboration of particular environmental concerns in the interaction between the media and public authorities, two key institutions which are involved in meaning production. Although this study of the transmission model of communication was limited in its objectives, it was still able to indicate some of the interactive processes through which certain concerns are
promoted. Specifically, Protess et al. draw attention to "agenda setting" processes between powerful institutions, rather than between the media and the general public.

The transmission model is one of a number of theoretical models that have been constructed to describe the movement of information from one social system to the other. Kaufman (1972) and Kotler (1972) appear to support this model, in which it is assumed that environmental meanings flow from certain sources through the media to the wider public. The transmission model claims that information about "change goals" is disseminated by claims makers to the communications subsystems and then to the public and the government.

The diffusion model is another model of information flow, supported by Tichenor et al. (1973). They state that the flow is "from professional and interest group concern through independent publication and attention in government to mass media attention and public concern" (1973: 271). Schoenfeld et al. (1979) who completed an environmental terminology chronology of O'Meara's (1978) work on environmental reporting in the New York Times and Chicago Tribune also tended to support the latter information diffusion model.

A similar diffusion perspective was taken by Strodthoff et al. (1985: 136), who theorized that the rise in environmental ideology is seen as the flow of environmental concern from "issue entrepreneurs," "claims makers," or "innovators," through special interest magazines, to wider
general interest magazines and on to the general public. Despite their emphasis on a constructionist perspective, their analysis also carried an underlying view of mass communication processes as linear, flow or transmission oriented.

A basic problem with these linear, diffusion models of communication and of the construction of the environment as a social problem is that, in their pursuit of linearity, they gloss over the interactive nature of meaning construction among and between institutions in society (Hansen, 1991: 447). Hilgartner and Bosk point out that:

"...the idea of an orderly succession of stages (in the development of social problems) is ...crude. Many problems exist simultaneously in several "stages" of development, and patterns of progression from one stage to the next vary sufficiently to question the claim that a typical career exists...Second, the focus on the typical career of a problem hinders analysis because interactions among problems are central to the process of collective definition." (1988: 54-5).

While important in the sense that they indicate some of the ways in which media coverage may help influence the priority ascribed to different social issues by the public, these agenda-setting studies do not go far beyond showing just that. They reveal little, if anything at all, of the complex ways in which different members of the public negotiate and interpret the environmental meanings offered by media coverage.

Attempting to determine how the information presented in the media is interpreted by the reader has proven to be a difficult, if not impossible, task. Further complicating
matters are the actual messages about environmental risks and hazards which are presented by the press and other sources, including scientific experts. These messages may be ambiguous or even in direct conflict with one another. Each source of health or environmental risk information has a perspective shaped by its frequently narrow and sometimes politicized objectives. These perspectives are also sometimes influenced by professional constraints and scientific uncertainty (Klaidman, 1991: 4).

The social construction of environmental issues, including acid rain, cannot be reduced to a question of information flowing from certain "source" institutions through the mass media to a wider public and to other institutions. A more complicated theory of social construction is presented by Gamson and Modigliani (1989). Their concept examines "discourse and public opinion as socially constructed parallel systems of meaning production" and of the elaboration of certain issues as a "value-added" process, rather than a linear process with dependent and independent variables (1989: 5). Therefore, an environmental problem may start in one particular forum (often in the science forum or the result of community concern) and continue to grow through complex interaction, involving influence and feedback processes, between a number of key individuals or institutions.

After completing a series of careful case studies of environmental controversies, Krimsky and Plough (1988) reached
a similar conclusion. While realizing the importance of multiple audiences and acknowledging that the public is made up of a highly diverse aggregation of individuals, they considered both the official and nonofficial multiple generators of risk information as playing a key role in the overall risk communication scenario. Krimsky and Plough (1988: 289) went on to state:

...that risk communications in their social context resemble tangled webs, in contrast to a parallel series of sender/receiver interactions.

As was pointed out earlier, studying the general public's interpretation of messages presented in the media is not a major concern of this thesis. It is not likely that much insight could be attained in the space allotted for this thesis into such a topic. As a result an attempt will be made to examine a smaller piece of the interpretation puzzle. More specifically, the symbolic construction of acid rain, which was presented to the public by the Ontario press will be studied.

CONSTRUCTING ENVIRONMENTAL NEWS.

In industrial societies, the body of information from which many objects are constructed and defined is invariably received at second hand. This information arrives to the public, in the form of news, already processed by the mass media. The information presented has been subject to alternative definitions of what constitutes news and how it
should be gathered and presented. The information is further structured by the various commercial and political constraints in which newspapers, radio, and television operate (Cohen, 1972: 16).

Groups with various interests wage symbolic contests through the media, using metaphors, catch phrases, and other symbolic devices which mutually support an interpretive package for making sense of an ongoing stream of events as they relate to a particular issue (Gamson and Stuart, 1992: 59). Each of the competing advocacy networks must make strategic choices in their symbolism as they attempt to get their preferred world view validated as "truth." Central to this strategy is an attempt to use symbols that resonate with larger cultural themes which are similar to those of the intended audience. Such themes could include jobs versus the environment or survival versus sacrifice. By using symbols, metaphors, stories, myths and folk tales that are part of one's cultural heritage, resonances are able to increase the appeal of certain world views, making them appear natural and familiar. Those who respond to the larger cultural themes will find it easier to respond to a package with the same resonance (Gamson and Modigliani, 1989: 5).

The portrayal of acid rain by the media could be one which is favourable to business. Attempted controls of the problem could be given a primary label as a major threat to jobs. Secondary images could include a potential threat which
has never been proven by science or the conveniences which are provided by activities which also happen to produce acid rain. While defending its position, the business portrayal of acid rain could discredit its opponents, by labelling them as alarmists or nothing more than "Chicken Littles" crying that the sky is falling. Or perhaps as being unrealistic, by expecting people to pay more for products or radically changing their lifestyles for the sake of emission controls that likely would not work anyway.

Another possible primary label could present acid rain as being a significant threat facing humanity. Secondary images could include barren wasteland where forests once stood, or dead lakes unable to support any kind of life. The results of acid rain could be seen as an indication of the fate of humanity, a chilling reminder of what the future holds unless we change our ways.

**ONCE AN ENVIRONMENTAL ISSUE BECOMES NEWS.**

The very reporting of certain facts by the media can be sufficient to generate concern, anxiety, indignation or panic. Possible reactions by the public to what is being reported, on the basis of these processed or coded images, include becoming angry, formulating theories and plans, making speeches, and writing letters to newspapers.

The relationship between one's perception of a social object, in this instance a newspaper story, and one's attitude
towards it is a complex one. Cohen (1972: 49) explains that, in simplest terms, at least two things occur in sequence: first, one perceives and selects according to certain orientations already in existence, and then secondly, what is perceived is shaped and absorbed into more enduring clusters of attitudes. Therefore, once an item has been perceived a certain way by an individual, the images in the person's inventory must be crystallized into more comprehensive opinions and attitudes.

Once the initial impact has passed over, the societal reaction to any sudden event, particularly if it is perceived as a dislocation of the social structure or a threat to cherished values, is an attempt to make sense out of what has happened. People talk less about the event and more about the implications of it. This sequence was observed by Cohen (1972: 49) in the mass media and public reaction to the sudden and unusual event of the shooting of three London police constables in 1966. Speculations about the shooting itself and a presentation of the images of the actors involved (the inventory) were replaced by discussions of the "issues", such as the restoration of the death penalty, arming of the police, and the nature of violence in society. The combination of this sequence with a constellation of other events such as the spectacular uncovering of the activities of organized criminal gangs, laid the foundation for a moral panic about crime.

Halloran suggests that:
...events will be selected for news reporting in terms of their fit or consonance with pre-existing images—the news of the event will confirm earlier ideas. The more unclear the news item and the more uncertain or doubtful the newsman (sic) is in how to report it, the more likely it is to be reported in a framework that has already been established (1970: 26).

The construction of acid rain by the press should be no exception. Once the press considers acid rain as being newsworthy, its construction should continue to grow and become more complex as the associated issues of acid rain are further explored. It is likely that the associated issues will follow familiar themes such as the costs involved with acid rain damage, the costs of emissions control, the role of government and the effects of long term exposure on other objects besides lakes and forests. There is also the possibility that certain components which were used to construct acid rain will continue to be used over and over again as subsequent articles dealing with the problem are published. It is only when the outlines of such general frameworks have been discerned, that one can understand processes such as symbolization, prediction, the reporting of non-events and the whole style of presentation.

NEWsworthINESS.

Newsworthiness of an event is an example of a media influence which cannot be determined using content analysis. The press is selective in what it considers as being newsworthy. According to Lacey and Longman (1993: 207) the
press can not only be selective, but it can also contradict espoused editorial policy and frequently environmental and developmental issues receive less prominence as their political significance increases.

Newsworthiness is a negotiated phenomenon rather than the application of independently derived objective criteria to news events (Tuchman, 1978: 46). News is not a pure cultural product, but "the product of a set of institutional definitions and meanings, which, in the professional shorthand, is commonly referred to as 'news values'" (Hall, 1973: 90).

The mass media use news values to determine which events are newsworthy and which are not. There is no instruction book to tell newspeople that certain subjects (drugs, sex, violence) will appeal to the public or that certain groups (youth and immigrants) should be continually exposed to scrutiny. Rather, there are built in factors, ranging from the individual reporter's intuition about what constitutes a good story, through precepts such as "give the public what it wants", to structured ideological biases, which predispose the media to make a certain event into news (Cohen, 1972: 45).

There are a number of theorists who claim that various gatekeepers are responsible for what is considered newsworthy and what is not (Tuchman, 1972; Gans, 1979). Mazur (1981: 114) claims that the narrow communication channels between prominent scientific sources and journalists serve as a
filter. They can limit the number of nonsensical stories that are reported and improve accuracy. At the same time, they selectively pass on stories that are particularly appealing to the scientific and journalistic gatekeepers. Hilgartner and Bosk (1988: 6) describe some of the characteristics of arenas in particular that have gatekeepers who exist at various levels and can decide "what is news," and therefore have some control over the flow of messages to audiences. These gatekeepers who are not listed but presumably include proprietors, editors and reporters can act in the interest of powerful groups who wish to control the public debate. Only the gatekeepers know for sure what influenced them in their portrayal of acid rain.

Fulford (1981: 6), claims that newspapers routinely report the disasters of the modern age, but seldom, if ever, do they draw any philosophical lessons from them. He claims that because newspapers are part of corporate capitalism (no matter what the opinions of the individual journalists), they must necessarily subscribe to the ideology of progress which is corporate capitalism's reigning religion. According to John Porter (1965: 458), "An essential characteristic of ideology is that it is other-worldly. If values are not heaven-oriented they are oriented towards the future, or to a non-existent state of worldly perfection." Newspapers are future-oriented; they dwell on the possibilities of what is to come, and not on the lessons of the past.
NON-NEUTRALITY OF THE MEDIA.

SOURCES AND THE MEDIA.

The relationship between journalists and their sources of information has an influence on what is and is not reported in the press. Sigal (1973) examined this relationship and found that journalists rely to a great degree on official sources and routine channels. While such standard news gathering techniques may be essential for journalists to do their work, the consequence, Sigal suggests, is that journalists "are exploited by their sources either to insert information into the news or to propagandize" (Sigal, 1973: 132).

Gans (1979) further explored the relationship between reporters and sources, and argues that the power of official sources, combined with the need for journalistic efficiency, ultimately structures how news organizations decide what is news. He suggests that efficiency and source power are parts of the same operation, since it is efficient for journalists to respect the power of official sources.

The sources that journalists turn to for answers can have an influence on the information they receive, thereby affecting the content of their columns or news reports. Studies of media coverage of environmental issues have repeatedly shown that they share much of the "authority-orientation" of other types of coverage and that environmental activists do not fare well as "primary definers" (Hansen, 1991: 449).
Hansen (1991) uses Einsiedel's (1988) presentation of her analysis of the Canadian press to show that government officials, scientists, and private industry spokespersons far outnumbered interest groups being used as sources in the coverage of environmental issues. Similar results were found in television news coverage of environmental issues. For example, in a comparative study of news coverage of environmental issues on British and Danish television, Hansen (1991: 450) mentions that public body or authority representatives, government, and independent scientists were used as primary definers most often, while environmental groups were rarely used.

The importance given to government sources is re-enforced by Friedman (1991: 21) who claims that government officials are the major information sources used in most environmental stories. She claimed that in 1983, reporters, particularly those on general assignment, either did not look for objective and knowledgable sources or had trouble finding them, and depended too much on local officials.

In a content analysis of three Toronto newspapers, Millar (1990: 25) found that from 80 to 90 percent of the stories reflected "official news" such as government coverage, press conferences, speeches, press releases, crime and the courts, rather than coverage stemming from the newspaper's own initiative.

Sometimes environmental experts are called on to comment,
but they are from outside of the regular channels, and are considered to represent "special interest" groups rather than the "national interest". However the national interest is often considered the same as the interests of business (Winter, 1992: 176). Noam Chomsky has described this phenomenon in the way that it is seen by power brokers of the State and private interests. For the power brokers, putting issues in the hands of the general public and allowing them to decide what is best for society constitutes a "crisis of democracy."

Chomsky writes:

Putting it in simple terms, the general public must be reduced to its traditional apathy and obedience, and driven from the arena of political debate and action, if democracy is to survive (1989: 3).

Reasons which may explain this dependence on government sources include government officials are considered creditable and authoritative; they often are easy to reach, and many are used to talking to reporters. Journalists rightly point out that they need to talk to government sources, as they are the ones either administering the laws or regulating environmental hazards. However, using government officials as sources too often leaves a reporter open for manipulation. In Washington, in particular, the practice of reporting environmental news by taking government agency handouts is considered a serious problem. Jim Sibbison, a former press officer for the Environmental Protection Agency (EPA), charged in 1988 that a principal occupational hazard in environmental reporting from
Washington is "relaying to readers self-serving statements by EPA officials as Truth" (as cited in Friedman, 1991: 22).

Winter (1992: 40) points out that the myth of objectivity, which is still prevalent in journalism, is one of the underlying forces behind the use of official sources. Based on the work of other theorists, Winter claims that newswriters are unable to express themselves outright, in the name of objectivity. Journalists, editors and producers actively frame their stories and then seek out sources who will support their perspective. Similar patterns have been found in analysis of coverage of specific environmental disasters or events (Molotch and Lester, 1975; Wilkins, 1987).

These works on the selection of sources by the media, are a good starting point for understanding the wider public inflection of such issues. However, this type of analysis does not normally distinguish between the potential for different messages that can come from the same group of primary definers. They also do not indicate the varying degrees of legitimacy with which different primary definitions are accredited. For example, Nimmo and Combs (1985) note that average citizens were generally predominantly represented in television coverage of the Three Mile Island accident, but that the narrative uses of "average citizens" were very different from network to network:

The CBS citizen interview normally involved persons expressing confidence in how things would turn out (for example, expressing appreciation for President Carter's visit to Middletown). ABC's average citizen interviews
focused instead upon personal fears and anxieties (Nimmo and Combs, 1985: 81).

Similarly, Hansen (1991) has suggested that in order to understand the relative "respect" given to different groups of primary definers, it is necessary to take into consideration the news-making scenarios through which such definers become newsworthy and vocalize their claims. There is some indication that when environmental pressure groups do appear as primary definers, they often do so through the forum of public protest or demonstration, a forum which carries considerably less "legitimacy" in Western democracies than formal political activity or the forum of "science" (Hansen, 1991: 450).

Although pressure groups seeking greater attention in the media and wider public attention of certain environmental issues may appear to have a low profile, their roles may in fact be considerably more complex. Both theoretical and empirical studies of environmental journalists and actual press coverage have indicated much more complicated roles. Environmental reporters, and other reporters who cover environmental issues, tend to be positive towards the role of environmental groups as news sources (Lowe and Goyder, 1983; Lowe and Morrison, 1984; Anderson, 1991; Hansen and Linne, 1991), albeit with clear hierarchies of credibility in their perception of different pressure groups. The low profile of most pressure groups as primary definers in actual media coverage suggests that, while they may play a key role as claims-makers, drawing the attention of the media to
particular environmental problems, journalists still prefer to turn towards the fora of "public authorities", "formal politics", and "science" for validation of such claims. The extent that certain environmental problems are covered and elaborated on by the media often depends upon the degree to which they become part of, and are articulated through, the agendas of these other "established" institutions (Hansen, 1991: 451).

From the perspective of environmental groups, previous research indicates that they view national quality newspapers as the best vehicle for influencing public opinion and government policy. Lowe and Goyder (1983: 74) found that the majority of the 77 environmental groups they surveyed made the most use of the national quality press. The authors found that 59 percent of the groups claimed to have received television coverage, 74 percent had received radio coverage and only 9 percent said that they had no media coverage at all.

MEDIA LOCATION AND PERCEPTION.

People who are exposed to the various forms of mass media are eventually sensitized to the presentation of a news story and become prepared to interpret it. Sensitization is a form of generalized belief system, which transforms an ambiguous situation into an absolutely potent generalized threat. Ambiguity, which gives rise to anxiety, is eliminated by structuring the situation to make it more predictable (Cohen,
1972: 77). Sensitization occurs because symbols are given a new meaning; studies show how in sudden disasters, or where the precipitating agent is unknown, warning cues are assimilated within the normal frame of reference—the roaring sound of a tornado is interpreted as a train, or the sound of water in a sudden flood is interpreted as a running faucet (Spiegel, 1957: 4). Such cues are not missed when the population is sensitized to them, and in fact the tendency then is to over-react.

Sensitivity and responsiveness may contribute directly to the construction of acid rain by the press. In order to make acid rain more predictable and easier to deal with, people may become less concerned with the continued threats and warnings as they restructure this new threat into their own reality. As a result of this sensitivity, some communities which have been exposed to acid rain for an extended period of time, may not consider it a serious problem. The result could be a decreasing number of articles associated with the negative effects of acid rain in local newspapers of affected communities. This decrease in articles will work against those who are not satisfied with the status quo and wish to see changes with respect to the issue of acid rain. As Berger and Luckmann (1966) point out:

...the conventional apparatus ongoingly maintains reality, it ongoingly modifies it. Items are dropped and added, weakening some sectors of what is still being taken for granted and reinforcing others. Thus the subjective reality of something that is never talked about becomes shaky (1966: 153).
The potential of acid rain to affect various regions differently could affect its social construction. For example, if one conceives of the situation as being catastrophic and moreover thinks it will happen again, get worse, and probably spread, it is likely that some sort of action will be taken to solve the problem. But if an environmental problem is seen as being defined in only local terms, it is not likely to get much attention outside of the affected area.

Parlour and Schatzow suggest that, after their study of public concern over environmental issues in Canada, that "There is no evidence to support the contention that the public was concerned about environmental issues before these were registered with the media (1978: 14)." Even though, people have been aware of environmental deterioration in a limited, localized context for generations. The media has broadened that awareness and transformed many discrete problems into major public issues (Lowe and Morrison, 1984: 75).

Conceptualizing an environmental problem in mass appeal terms is necessary to construct the rule changes which will act towards a solution. The environmental problem must also be defined in such a way that it is seen as the legitimate responsibility of the entire system. In other words, if an environmental problem is considered only a local problem then it will be expected that the "locals" solve the problem themselves; the event has to be magnified to national
proportions and the responsibility for it shifted upwards. A possible exception would be a theme reoccurring in different locations, such as the contamination of local groundwater. If contamination occurred only in one small community, it is not likely that the event would make national news. However, if the same problem were to occur in a number of communities it is likely that this "rash" of contaminations would make national news, inspiring concern within certain groups of society.

If acid rain has killed or threatened lakes in the Sudbury region it is primarily considered a local problem, of little or no interest to those outside of the area. However, if acid rain threatens a number of lakes (the more the better) throughout Ontario, it becomes a major news story which has the potential to appeal to all Ontarians.

Because acid rain does not affect all areas equally, it is expected that the coverage provided by the press will not be the same in all communities. It is likely that the communities which have been exposed to the effects of acid rain over long periods of time will have become sensitized to the problem and that the negative consequences of acid rain will not be emphasized.

It is also likely that the negative effects of acid rain will not be perceived the same in every area. Negative effects may be placed into different categories. As a result, only the negative effects which are higher in the resulting ordered
hierarchy may be considered significant and worth reporting. For example, the most serious effect of acid rain could be the acidification of local lakes in northern Ontario which are dependent upon them to bring in tourist dollars from sportfishing enthusiasts. However, maple syrup producers in northeastern Ontario and Quebec might consider the damage to maple tree as being more serious.

OTHER INFLUENCES.

There are other factors, such as control of the media and advertisers, which have the potential to influence the media's construction of reality. Unfortunately, the content analysis methodology employed by this thesis does not allow the researcher to go "behind the scenes" to determine what these actual influences may have been. Although the existence of these factors can not be proven by this thesis, it is important to realize that they exist and have the potential to affect what the media has and has not presented to the public as reality.

CONTROL OF THE MEDIA.

A number of sociological studies have attempted to explain the possible media influences of ownership. The result has been a number of different perspectives presented by researchers. For example, Graham Murdock (1980: 38) has suggested that sociological work on the newspaper industry has
followed two perspectives, the pluralist and the Marxist.

Pluralists are defenders of the press, claiming that it is truly independent. They argue that power in society is dispersed amongst a variety of interest groups which do not coincide with the property relations discussed by Marx. According to adherents of this perspective, "pluralistic societies are dotted with a variety of pressure groups, some of them striving to promote more or less overtly political aims" (Gurevitch and Blumler, 1977: 286). Free competition between firms is often supported in this argument. Not only is there a dispersal of power in society as a whole, it is also a feature of communities and organizations within it. The result is that it is impossible for any one group to gain the upper hand for any extended period of time. The pluralist view is that the owners' desire for profit, the editors' and journalists' professional interests, and the interests of the readers are all finely balanced.

The second perspective, which opposes the pluralist ideology, is sub-divided into structuralist's and instrumentalist's. Both structuralists and instrumentalists are influenced by a distinctly Marxist perspective. The difference between the two groups is the attention they give to particular aspects of corporate operations.

Structuralists are concerned with showing how the policies pursued by the corporations stem from their place in the capitalist system and follow its economic logic.
Instrumentalists are primarily concerned with who holds the power and how it is exercised.

Entman (1989: 96), a structuralist, argues against the view presented by the pluralists, and suggests that the connection between competition and newspaper quality news is not an obvious one. He claims that competition has "negligible effects" on newspaper quality and that there are sound theoretical reasons for suspecting that this would be the case. He points out that a local newspaper monopoly is a product of the very same economic market forces that create the ideals of the free press. If newspaper publishers continue to follow the free enterprise norms of profit maximization, it is likely that they will end up producing a least common denominator product that attracts a mass audience and pleases advertisers. Entman does not consider competition in a free market system to be a solution to the problem of local newspaper monopolies. In the free market system, larger media chains are often able to take over smaller, independent newspaper operations, thereby reducing the selection and diversity of the editorial perspectives available to the public.

Entman makes an important distinction between the economic market and the marketplace of ideas. It is the diversity of the marketplace of ideas which should be the principal focus for those concerned about democracy. It appears that service to the idea market is contradicted by
success in the economic market (Entman, 1989: 97). Structuralists claim that we need to show how concentration and conglomerations in the newspaper industry came about if we are to explain why we have the press we do and account for its deficiencies.

Ralph Miliband (1969: 229), an instrumentalist, argues that the facts about concentration and conglomerations undermine the pluralists case. Far from there being a divorce between ownership and control, ultimate power resides with the owners who are effectively able to determine long-term policies such as whether to expand or invest, whether to close or to merge, and who also decide on the hiring and firing of executives. Managers only have discretion within the framework set by such policies or decisions and therefore have only a limited form of control, sometimes referred to as "operational control".

Instrumentalists also argue that the owners of large media conglomerates share the same social background and participate in a common way of life: they can be identified as typical members of a privileged ruling class, bending the running of the corporations to their own designs. This argument is further reinforced by the overlap between companies that occurs through interlocking directorships so that the same individuals sit on several different boards of directors giving them opportunities for sharing business information and access to channels of influence. It is this
combination of shared life-style and boardroom experience that makes newspaper owners part of a capitalist class which influences the onesidedness of the press and its support for this class.

ADVERTISING.

Imagery production is an overwhelmingly for-profit enterprise, heavily dependent upon advertising. News and other programming has become a commodity used by media organizations to attract an audience which they can then sell to advertisers. Beyond its size, these advertisers are concerned with the "quality" of their audience which is defined in purchasing power and the company which their advertising copy keeps. Bagdikian (1978) offers the example of a Detroit News editor who instructed staff to aim its stories at people in their thirties with hefty salaries. The story choices, he explained in a memo, "should be obvious: they won't have a damn thing to do with Detroit and its internal problems." The editor called for more stories about "the horrors that are discussed at suburban cocktail parties" (Bagdikian, 1978: 64).

The need to attract advertisers induces programmers and editors to produce content that is likely to create a "buying mood." Advertisers often shy away from sponsoring or being associated with material which may be considered controversial or disturbing, fearing that such material may interfere with the buying mood that they wish to maintain.
The problems that advertisers can present were experienced by Gloria Steinem (1990) before Ms. magazine decided to abandon advertising altogether. Especially in women's magazines, advertisers demand a "supportive editorial atmosphere" or "contemporary copy." She describes the "insertion orders" given to advertising sales people from various manufacturers. For example, S.C. Johnson & Son, makers of Johnson wax and numerous other products, ordered that its ads "should not be opposite extremely controversial features or material contrary to the nature/copy of the advertised product." Proctor & Gamble, a powerful diversified advertiser, ordered that "its products were not to be placed in any issue that included any material on gun control, abortion, the occult, cults, or the disparagement of religion. Caution was also demanded in any issue covering sex or drugs, even for educational purposes." (Gamson et al., 1992: 378).

Advertising, then, is a force toward the homogenization of imagery, but not merely because such imagery is inoffensive. Advertising must compete with non-advertising content for attention. The freshness and visual innovativeness of advertisements stands out even more when they contrast with dull and predictable news stories. Program content should not only create the proper buying mood but should avoid upstaging the advertising content that pay the bills (Gamson et al., 1992: 378).

Herman and Chomsky (1988: 14) point out that large
corporate advertisers will have little interest in sponsoring media content that targets audiences with little buying power or that produces images critical of corporations. Curran and Seaton, (1985: 43) use the example of one advertising executive stating as early as 1856, that some journals are poor vehicles because "their readers are not purchasers, and any money thrown upon them is so much thrown away." This mentality of advertisers was made evident by the decline in the social-democratic press, in Great Britain after the World War II. Between 1960 and 1967, the Daily Herald, News Chronicle, and Sunday Citizen all failed or were absorbed into establishment systems, despite a collective average daily readership of 9.3 million. As Curran points out, with 4.7 million readers in its last year, the Daily Herald actually had almost double the readership of The Times, the Financial Times and the Guardian combined. The death of the Herald, as well as of the News Chronical and Sunday Citizen, was in large measure a result of progressive strangulation by lack of advertising support. The Herald, with 8.1 percent of national daily circulation, got only 3.5 percent of net advertising revenue; the Sunday Citizen got one-tenth of the net advertising revenue of the Sunday Times and one-seventh that of the Observer (on a per-thousand-copies basis) (Curran and Seaton, 1985: 43).

The influence of the advertising dollar on the content of newspapers is further illustrated by a letter to the editor of
the Windsor Star (1994) by James Winter. In the letter, Winter questioned the integrity of the Windsor Star after the paper had pulled a column from its home delivery edition. In the column in question, journalist Gord Henderson questioned the wisdom of Chrysler Corp. paying American executives bonuses that ranged between 75 to 100 per cent of their salaries, while Canadian CAW members earned bonuses of only 1.5 per cent of their salaries. In his letter to the editor Winter stated;

By censoring Henderson's column from the late edition, Star management lends credence to those who view the press as a corporate lapdog. All the more so in view of Chrysler's recent advertising spread in the Windsor Star, which brought in almost $300,000 in revenue (Windsor Star, 1994: 8).

More appropriate methodologies for determining the "behind the scenes" influences of media owners and advertisers include ethnomethodological and participant observation studies. Such methodologies present the possibility of a rapport developing between the researcher and journalistic staff. A good rapport could result in the researcher gaining access to private or confidential information that is not readily available to "outsiders." Unfortunately, because it has been 16 years since acid rain first became considered newsworthy, it would be difficult, if not impossible, to locate and gain information from the newworkers responsible for constructing and introducing acid rain to the public.
IV: METHOD.

The method undertaken in this thesis was to carry out a content analysis of five Ontario newspapers between January 1, 1979 and December 31, 1979. A twelve month time frame was used in order to get a broad selection of acid rain articles. The newspapers selected were the Windsor Star, Toronto Star, the Globe and Mail, the Sudbury Star and the Ottawa Citizen. Ontario newspapers were selected because of the province's unique position as both a major receiver and producer of acid rain.

The Toronto Star was selected as a benchmark to determine which twelve consecutive months would be selected. Out of the five Ontario newspapers studied, the Toronto Star was the only one published seven days a week. As well, the length of the Toronto Star was consistently greater than the other four dailies. It was felt that the Toronto Star would offer more articles on acid rain simply because of the larger volume of the newspaper.

October, 1979 was selected as a starting point for analysis because it was the month in which The Final Report on Acidic Precipitation (Curran, 1979) was released by the federal government. It was felt that this report would be newsworthy enough to launch the acid rain problem into the media spotlight. Toronto Star newspapers were analyzed for articles on acid rain going back in time from October until a 30 day period was found in which there were no articles
dealing with any issues associated with acid rain. There were no articles found going back 30 days from February 6, 1979. The article on acid rain on that date was the first article to appear in 1979 dealing with the problem. It was decided to begin the analysis on January 1, 1979 and continue it for the next 12 months to Dec 31, 1979, covering all acid rain constructions throughout 1979. The selection process that was first applied to the Toronto Star for determining a time frame for analysis was also applied to the four remaining newspapers. The result was the same period of analysis (January 1, 1979 - December 31, 1979.) for each paper.

Both the Toronto Star (1979) and Globe and Mail (1979) were selected because of their high listed circulation figures. Both newspapers are also published and easily available in the Toronto area, which is a major commercial and political centre for the province. The most populated areas of southern Ontario also had relatively easy access to both Toronto newspapers.

In 1979, The Toronto Star's parent company was Torstar. At the time, Torstar holdings consisted of Harlequin Enterprises, printing and other business interests. Today the Toronto Star professes to be a progressive paper, written for the people. It is still owned by the Torstar Corp. which is partly owned by Southam Inc. The two companies have exchanged members of their boards of directors. In December 1991 they also announced an exchange agreement covering editorial copy

In 1979 the Globe and Mail was one of the nine Canadian newspapers in the F.P. Publications newspaper chain (One of the F.P. Publications, the Montreal Star, went out of business in September of 1979). In 1979 F.P. Publications was owned by the Sifton family. It was sold to the Thompson chain of newspapers in January of 1980.

The Ottawa Citizen, which was part of the Southam Corp., was selected because it is in an area of Ontario which is heavily exposed to acid rain. However due to the buffering capacity of the soils and many of the lakes in the Ottawa Valley area, the devastating effects of acid rain are not readily apparent. The Ottawa Citizen was also selected for analysis because Ottawa is Canada's national capital and is the centre of power for this nation's policy and law-makers.

The Windsor Star (1979), also owned by the Southam Corp., was selected for analysis in order to sample the information about acid rain made available to the local community. The Windsor Star was also selected because of Windsor's close proximity to the United States. It was important to select a newspaper from a border community because of the transnational nature of the acid rain problem between Canada and the United States.

The final newspaper selected for analysis was the Sudbury Star, part of the Thompson chain of newspapers. The Sudbury area had been particularly hard hit by the effects of acid
rain. The area was also home to Inco Ltd's. smelter, the largest single source of acid rain causing, sulphur dioxide pollution in the world (Weller, 1981: 30).

Articles from the five newspapers were selected for analysis on the basis of the their titles. Titles had to include acid rain or deal with associated issues such as dying lakes, Inco, Ontario Hydro, Canada--United States agreements, etc. All pages of the newspapers over the 12 month period were examined. An article located in the back pages of a newspaper was just as likely to be selected as a front page story.

Data taken from the selected articles were placed into one of nine categories; 1) reporters, 2) what causes acid rain/what is acid rain, 3) who causes acid rain, 4) solutions/what is being done, 5) why is acid rain produced, 6) symbolism used to construct acid rain, 7) what is happening/what will happen, 8) who or what is affected by acid rain, and 9) the sources used by the reporters in their construction of acid rain. Although the reporter and symbolism categories were straightforward, the other seven categories had to be broken down into sub-categories.

The "causes of, and what is acid rain" category was broken down into sub-categories which included the scientific components of acid rain, industries contributing to acid rain (this section did not include the actual names of the companies), specific objects and vague descriptions of what acid rain is. The "who causes acid rain" category was a little
more specific, naming countries, provinces, states and actual industries. The "solutions/what is being done" category was divided into seven sub-categories: technical solutions, researching a solution, diplomatic solutions (Canada-U.S.), inter-governmental solutions (federal and provincial governments), political solutions (Ontario government), the financial costs of solutions and public education. The sub-categories of the "why is acid rain produced" category included: energy needs, economic issues, political reasons, not enough known about acid rain, failed technology and human behaviour. The "what is happening/what will happen" category includes the predictions of the effects of acid rain if it continues for a long period of time. The sub-categories are as vague as ambiguous descriptions and predictions to society and human health, wilderness and ecosystems, and become as specific as fish and lakes. The next category, "Who or what is affected by acid rain," is similar to the previous category, except it lists the specific areas and objects which have already been affected by acid rain.

The information that was found during the content analysis was examined using qualitative rather than quantitative methods. While quantitative methods are useful in many areas of media analysis they did not lend themselves well to this particular thesis. As Susan MacMillan (1988: 75) noted, quantitative methods are inappropriate if one seeks to uncover the latent meanings within media discourse and the
taken-for-granted assumptions of journalists covering environmental matters. Less structured methods allow scope for creativity and interpretation and are no less valid than more positivist approaches. While content analysis produces a huge amount of statistical information on the frequency with which items appear, it does not allow the researcher to analyze how meanings are constructed through language and imagery and the overall context in which they are placed.

Budd et al. (1967: 2) describe content analysis as a systematic technique for analyzing message content and handling. It is a tool for observing and analyzing the overt communication behaviour of selected communicators. The researcher is able to tap into the process through the message to gain their primary information about the communication situation. With this information the researcher is able to give a detailed account of the communication and make limited predictions about the source.

Kerlinger states;

...content analysis, while certainly a method of analysis, is more than that. It is...a method of observation. Instead of observing people's behaviour directly, or asking them to respond to scales, or interviewing them, the investigator takes the communications that people have produced and asks the questions of the communications (1964: 544).

Like other methodologies, content analysis brings a number of advantages and disadvantages to this thesis. This methodology is unobtrusive and nonreactive, the researcher does not influence the data being studied. It also allows the
researcher to carry out a longitudinal study the development of a social construction, which occurred over 16 years ago. Content analysis is a comparatively inexpensive methodology, in this instance, all of the required material was obtained at one location, relatively quickly and at a minimal expense.

A major disadvantage of content analysis is that it does not allow the researcher to determine which acid rain articles were submitted to editors by reporters but not printed, and reasons behind such decisions. The inability of content analysis to explore "behind the scenes" also makes it impossible to determine what influences various gatekeepers, such as reporters, editors, advertisers and newspaper owners played on the print medias construction of acid rain.
V: RESULTS and DISCUSSION.

SYMBOLIC CONSTRUCTION OF RISK.

SCIENCE AND THE SYMBOLIC CONSTRUCTION of ACID RAIN.

The analysis of the research data determined that the press did not present a homogeneous construction of acid rain. The 209 articles, editorials and letters to the editor offered a virtual collage of information concerning the causes, effects, solutions and conflicts associated with acid rain. The result was several different constructions being presented to the public.

One of the perspectives offered by the press was to present acid rain using a scientific framework. This framework employed scientific descriptions to explain the causes and composition of acid rain. A total of 25 chemicals or chemical combinations, including sulphur, sulphur dioxide and nitrogen oxide were mentioned in the majority of the 209 articles. Several articles also explained acid rain using the pH scale.

The results of presenting acid rain in a scientific perspective were confusing. The list of chemicals presented, and the pH scale, were not likely understood by those without a specialized knowledge in chemistry. Even those with specialized knowledge would likely be confused by the large assortment of chemicals and chemical combinations presented by the press.

Members of the public without a chemistry background would have to place their complete trust in the press for
accuracy. They would have to take the scientific definitions of acid rain at "face value". If the reporter writing the article knew little about the subject matter of a story, they would also be completely dependent on the source of their information. The "blind faith" relationship between reader and journalist would, in turn, exist between the journalist and their sources.

The print media's use of chemical descriptions to describe acid rain can be traced back to the original information source used by the press, Ontario's Environment Minister, Harry Parrott. When acid rain became newsworthy, Mr. Parrott was the first source of information used by all five newspapers. In February, 1979, the press covered his presentation on acid rain before the Legislature's standing committee on resources development. During the presentation, Parrott explained that the causes of acid rain were millions of tons of sulphur and nitrogen oxides discharged from combustion and other sources into the air, where they are oxidized to various sulphates and nitrates. Once in the air, they dissolved in rain and snow and the precipitation became acidic.

David Altheide (1978: 374) explains that the choice of an angle for a story is influenced by the news source. Ideally, journalists act as a conduit for information presented by the sources to the public. Altheide states that there are three considerations which can influence the likelihood of this
happening. The first is how much the journalist knows about the subject or event. This is particularly important if a report is technical or complicated. The second is the journalist's opinion of the integrity and legitimacy of the news sources. The third consideration is the practical necessity of remaining in the good graces of the news source and relevant officials for future assignments.

Altheide states that two of the considerations are more likely to have an impact on the reporter's role in a story. Due to the complicated nature of acid rain and because there was not a large stock of knowledge among the general public at the time, only one of the considerations applies. If a reporter knows little about the subject matter and must trust and rely on the news source for future information, it is likely that the source will essentially tell the story.

As well as offering a scientific perspective on the causes of acid rain, Parrott also listed causes in layperson's terms. This use of non-scientific terminology to explain the causes was continued throughout 1979 by the press.

The burning of fossil fuels (oil, gasoline and coal) was the most frequently cited cause of acid rain pollutants, found in 78 of the 209 articles. The following example was found in the Windsor Star.

Acid rain occurs when sulphur and nitrogen oxides react with water vapour in the atmosphere, creating a mild form of sulphuric acid that eventually falls as rain. The oxides are emitted when coal, oil and gas are used as fuels (August 9, 1979: 30).
There were other less specific causes of acid rain such as pollution and industrial emissions which were mentioned 37 times. Other, more specific causes, such as smelting (31 times), automobiles or the transportation industry (29 times) and smokestacks (17 times) were also listed.

Acid rain is the sulphur dioxide and nitrogen oxide released into the atmosphere by cars and plants burning fossil fuels (Globe and Mail, July 27, 1979: 9). The non-scientific reader may not have understood the chemical make up of acid rain, but at least they would know where the emissions were coming from.

There were a number of causes presented by the press using the scientific and non-scientific perspectives. Although the causes were presented, there was no comparison done to determine which causes were most serious or most responsible for contributing to the problem.

Why Acid Rain is Produced.

The newspapers construction of acid rain went beyond describing just the causes of the problem. Journalists also reported on the reasons why it was produced, possible solutions, potential effects of long term exposure, who the major polluters were and those most affected.
Table 1: Percentage of Reasons for the Production of Acid Rain As Listed in Five Ontario Newspapers, From January 1, 1979 Until December 31, 1979.

<table>
<thead>
<tr>
<th>REASONS</th>
<th>W.S. 1 (15)</th>
<th>T.S. 1 (6)</th>
<th>G.M. 1 (14)</th>
<th>S.S.* 1 (7)</th>
<th>O.C. 1 (12)</th>
<th>Total Mentions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy Needs.</td>
<td>36.6 (15)</td>
<td>15.8 (6)</td>
<td>20.6 (14)</td>
<td>17.5 (7)</td>
<td>18.1 (12)</td>
<td>21.6 (54)</td>
</tr>
<tr>
<td>Economic Issues.</td>
<td>14.6 (6)</td>
<td>39.5 (15)</td>
<td>33.8 (23)</td>
<td>27.5 (11)</td>
<td>19.7 (13)</td>
<td>27.2 (68)</td>
</tr>
<tr>
<td>Government Inaction.</td>
<td>24.4 (10)</td>
<td>23.7 (9)</td>
<td>30.9 (21)</td>
<td>25.0 (10)</td>
<td>34.8 (23)</td>
<td>29.2 (73)</td>
</tr>
<tr>
<td>Too Little Knowledge.</td>
<td>14.6 (6)</td>
<td>13.1 (5)</td>
<td>2.9 (2)</td>
<td>7.5 (3)</td>
<td>10.6 (7)</td>
<td>9.2 (23)</td>
</tr>
<tr>
<td>Failed Technology.</td>
<td>4.9 (2)</td>
<td>7.9 (3)</td>
<td>11.8 (8)</td>
<td>15.0 (6)</td>
<td>10.6 (7)</td>
<td>9.2 (23)</td>
</tr>
<tr>
<td>Human Behaviour.</td>
<td>4.9 (2)</td>
<td>0.0 (0)</td>
<td>0.0 (0)</td>
<td>2.5 (1)</td>
<td>6.1 (4)</td>
<td>2.8 (7)</td>
</tr>
<tr>
<td>Natural Causes.</td>
<td>0.0 (0)</td>
<td>0.0 (0)</td>
<td>0.0 (0)</td>
<td>5.0 (2)</td>
<td>0.0 (0)</td>
<td>0.8 (2)</td>
</tr>
<tr>
<td>Total Percent.**</td>
<td>100.0 (0)</td>
<td>100.0 (0)</td>
<td>100.0 (0)</td>
<td>100.0 (0)</td>
<td>99.9 (0)</td>
<td>100.0</td>
</tr>
</tbody>
</table>

W.S.=Windsor Star.
T.S.=Toronto Star.
G.M.=Globe and Mail.
S.S.=Sudbury Star.
O.C.=Ottawa Citizen.
*nb. newspaper only published eight months of the year due to strike.
**nb. Totals may not equal 100 percent because of rounding.
Table I lists the reasons presented by the press for the continued production of acid rain. Reasons include energy needs, economic issues and government inaction, failed technology, lack of knowledge, human behaviour and natural causes.

When articles from all five newspapers were totalled together, the "energy needs" category was the third most mentioned reason for the production of acid rain, at 21.6 percent. Among four out of five of the individual newspapers, the "energy needs" category was also the third most mentioned. The exception was the Windsor Star, where the "energy needs" category was mentioned more than any other as being a cause of acid rain.

There were basically two major focuses to the energy needs category. The first was the reluctance of the United States to rely on nuclear power as a major source of energy. This uneasiness about nuclear power had increased greatly the year before, after a serious nuclear disaster at Three Mile Island in Pennsylvania.

The second focus, was an energy crisis facing the United States because of a perceived oil shortage. This second focus can be used to illustrate how journalists tended to list information but did not follow up their articles with an in-depth analysis.

Due to the perceived oil shortage, many diplomats and scientists feared that the United States would become more
reliant on coal-fired generators as a major source of energy. These fears were to be realized in July of 1979 when a greater reliance on coal-fired generators was announced by American president Jimmy Carter. The increased emissions from these plants would eventually result in an increase of acid rain pollutants blowing into Canada.

President Jimmy Carter's energy plan could bring "massive" new floods of acid rain that is already killing Ontario's lakes, provincial Environment Minister Harry Parrott said today (Toronto Star, July 17, 1979: A1).

Carter's new energy plan was reported in three of the five newspapers (Toronto Star, Globe and Mail, and Ottawa Citizen). However, only the Toronto Star followed up with any analysis of Carter's plan.

The economic reasons for the production of acid rain were carried in all newspapers. The "economic issues" category was mentioned the second most often among the total of newspaper articles. However, when the individual newspapers were examined, the "economic issues" category was the most mentioned in three out of five newspapers as being the reason for the production of acid rain. The three newspapers were the Toronto Star, the Globe and Mail, and the Sudbury Star.

Most economic reasons were concerned with the high cost of implementing acid rain controls and the effects that such high costs may have on the economies of Canada and the United States. One common quote, from a report prepared by the Great Lakes Water Quality Board, that appeared in a number of
articles and editorials was as follows,

Early estimates for a 50 per cent reduction in sulphur dioxide in eastern Canada might cost $350 million per year (for the next 20 years). Estimates for the northeastern U. S. range between $5 and $7 billion a year (Globe and Mail, July 10. 1979: 1).

The newspapers also raised concerns that the potential benefits would not be worth the cost of controls which could make Ontario industries less competitive and result in job losses if companies were forced to implement such controls. The excuses used to defend Ontario industries were not mentioned by the press when dealing with the issue of American companies which produced acid rain pollutants.

Government inaction was the most common reason presented by articles from all five newspapers for the continued production of acid rain in North America. However, among the individual newspapers, the "government inaction" category was only mentioned more often than any other in the Ottawa Citizen. In the four other newspapers, this category was the second most often mentioned.

All five newspapers presented reasons blaming federal, provincial, and American federal governments. Some blamed the Canadian federal government because of the lack of a national air pollution law. Provincial governments were criticized because of their own slack air pollution laws. The Ontario government was blamed for not enforcing control orders against industry (notably Inco). The American government was blamed for their energy policy and for the loop holes of the Clean
Air Act.

Lack of knowledge about acid rain and the failure of technology to control or solve the problem were also mentioned, but these reasons were not as common as the energy, economic, and political ones. The argument put forward by some of the sources used in the newspapers was that the actual causes and effects of acid rain were not yet fully understood. More data would be required over a longer period of time before a complete solution to the problem could be found.

The next category of reasons explaining the continued production of acid rain was the "failed technology" category. The most common theme in this category presented by all of the newspapers, was that the technology did not exist to completely control acid rain emissions.

A secondary "technology" theme that appeared in only three newspapers (Windsor Star, Ottawa Citizen, and Globe and Mail), was that Canadian companies preferred the dispersion method of eliminating acid rain emissions by constructing tall smoke stacks. Although this method was effective in reducing local acid rain problems, it simply moved the pollution to some place else.

The allusion to the lack of knowledge and a perceived failure of technology appear to be common themes in the media's reporting of other environmental events as well as acid rain. Lowe and Morrison (1984: 78), claim that environmental disasters automatically command attention as
dramatic events. Concerning some events, such as Three Mile Island, Chernobyl and Bhopal, the media seem to offer their own questioning of technological achievement. Even with other less obvious environmental events, such as acid rain, this questioning is not entirely absent. Lowe and Morrison suggest that the questioning of technological achievement flows from the journalistic preference for the negative and dramatic rather than the positive and unfolding. In other words, the inferential structure, built on past dramatic events, results in a tendency to present the environment as a non-success story for human achievement which, by implication, offers a critique of the ethos and logic of advanced industrialism.

**Acid Rain Solutions.**

Possible solutions were another component of the print media's construction of acid rain. Like the other components, a number of solutions were listed but no in-depth analysis was completed.

None of the solutions presented were definite and certain. Many were vague and shifted the responsibility of solving the problem to others outside of Ontario. Examples of looking outside of the province for a solution included expecting the federal government to come to an international agreement with the United States or expecting stricter air pollution controls south of the border.

The most mentioned solution to acid rain, found in 100 of
209 articles, was an international treaty with the United States to deal with air quality standards. Specific examples of what might be included in the treaty were not mentioned. The closest that the press came to describing details was to suggest that the recently concluded Great Lakes Water Quality Agreement be used as a model. Possible sacrifices that may have had to be made by Ontarians, in order to comply with such a treaty, were also not mentioned.

Other proposed inter-governmental solutions looked for agreements between the federal and provincial governments, but again no specific details. Only when proposed diplomatic solutions were made involving the Ontario provincial government were there any specific details mentioned in the press. In these instances, the specific details dealt with the provincial government proposing to order the temporary shut down of the Inco smelter at Sudbury or simply having the government order Inco to cut its sulphur dioxide emissions to 1,500 tons per day, down from 3,600. Recommendations of controls imposed on Inco, by the provincial government, were relatively rare, appearing in only three newspapers a total of five times.

The next most frequently mentioned categories of solutions were technological or industrial solutions and researching a solution which were mentioned in 69 and 58 articles, respectively. Like the diplomatic solutions, the majority of the technological solutions were ambiguous and
vague. Examples include: the technology exists to reduce the acid deposits, but is costly to use; industries responsible for acid rain should co-operate with the government to develop and utilize pollution control techniques to limit sulphate and nitrate emissions; immediate remedial action will require some neutralization program of the lakes now threatened.

The most specific technological solution appeared in November, 1979, when news of a possible technological breakthrough at Inco that would significantly reduce sulphur dioxide solutions. Although the breakthrough appeared promising, Inco engineers warned that the process could take years to perfect. They also cautioned that although the process was successful in their testing labs, there was no guarantee that it would be successful at the actual smelters.
Table II: Percentage of Solutions to Acid Rain as Presented in Five Ontario Newspapers From January 1, 1979 Until December 31, 1979.

<table>
<thead>
<tr>
<th>SOLUTIONS.</th>
<th>W.S.</th>
<th>T.S.</th>
<th>G.M.</th>
<th>S.S.*</th>
<th>O.C.</th>
<th>Total Mentions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical/</td>
<td>22.7</td>
<td>26.3</td>
<td>14.0</td>
<td>27.9</td>
<td>14.7</td>
<td>19.8 (69)</td>
</tr>
<tr>
<td>Industrial. (17)</td>
<td>(10)</td>
<td>(16)</td>
<td>(17)</td>
<td>(9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research.</td>
<td>20.0</td>
<td>15.8</td>
<td>12.2</td>
<td>16.4</td>
<td>19.7</td>
<td>16.3 (57)</td>
</tr>
<tr>
<td></td>
<td>(15)</td>
<td>(6)</td>
<td>(14)</td>
<td>(10)</td>
<td>(12)</td>
<td></td>
</tr>
<tr>
<td>Diplomatic.</td>
<td>33.3</td>
<td>23.7</td>
<td>24.6</td>
<td>29.5</td>
<td>32.8</td>
<td>28.7 (100)</td>
</tr>
<tr>
<td></td>
<td>(25)</td>
<td>(9)</td>
<td>(28)</td>
<td>(18)</td>
<td>(20)</td>
<td></td>
</tr>
<tr>
<td>Inter-</td>
<td>17.3</td>
<td>18.4</td>
<td>23.7</td>
<td>13.1</td>
<td>13.1</td>
<td>18.0 (63)</td>
</tr>
<tr>
<td>government.</td>
<td>(13)</td>
<td>(7)</td>
<td>(27)</td>
<td>(8)</td>
<td>(8)</td>
<td></td>
</tr>
<tr>
<td>Political</td>
<td>1.3</td>
<td>7.9</td>
<td>5.3</td>
<td>1.6</td>
<td>4.9</td>
<td>4.0 (14)</td>
</tr>
<tr>
<td>(Federal).</td>
<td>(1)</td>
<td>(3)</td>
<td>(6)</td>
<td>(1)</td>
<td>(3)</td>
<td></td>
</tr>
<tr>
<td>Political</td>
<td>1.3</td>
<td>5.3</td>
<td>11.4</td>
<td>9.8</td>
<td>1.6</td>
<td>6.6 (23)</td>
</tr>
<tr>
<td>(Ontario).</td>
<td>(1)</td>
<td>(2)</td>
<td>(13)</td>
<td>(6)</td>
<td>(1)</td>
<td></td>
</tr>
<tr>
<td>Public</td>
<td>1.3</td>
<td>2.6</td>
<td>6.1</td>
<td>0.0</td>
<td>6.6</td>
<td>3.7 (13)</td>
</tr>
<tr>
<td>Education.</td>
<td>(1)</td>
<td>(1)</td>
<td>(7)</td>
<td>(0)</td>
<td>(4)</td>
<td></td>
</tr>
<tr>
<td>Change</td>
<td>2.7</td>
<td>0.0</td>
<td>2.6</td>
<td>1.6</td>
<td>6.6</td>
<td>2.9 (10)</td>
</tr>
<tr>
<td>Lifestyle.</td>
<td>(2)</td>
<td>(0)</td>
<td>(3)</td>
<td>(1)</td>
<td>(4)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>99.9</td>
<td>100.0</td>
<td>99.9</td>
<td>99.9</td>
<td>100.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Percent.**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

W.S.=Windsor Star.
T.S.=Toronto Star.
G.M.=Globe and Mail.
S.S.=Sudbury Star.
O.C.=Ottawa Citizen.
*nb. newspaper only published eight months of the year due to a strike.
**nb. Totals may not equal 100 percent because of rounding.
The other specific example of using technology to combat acid rain was a short term solution. This process involved placing large amounts of lime in damaged lakes or fields. The alkaline content of the lime balanced out the effects of the acid rain on the water or soil. This method was very costly and impossible to apply to all damaged areas of Ontario. Effects of the liming are temporary and the process has to be repeated continually.

Each of the newspapers called for more research into acid rain. However, once again, some of the examples were extremely vague, such as "government researchers are studying the possibility of reversing some trends" (Ottawa Citizen, 1979: 14) or "more careful scientific study of acid rain dangers" (Windsor Star, 1979: 36). There were also more specific examples such as "effects of acid rain in lakes southwest of Sudbury will be the subject of a study paid for by a provincial lottery grant" (Sudbury Star, 1979: 3) and "the U.S. EPA has begun an extensive study of the effect of acid rain on every major field crop in that country as part of a ten year program to study the acid rain phenomenon" (Globe and Mail, 1979: 4).

Scientific research, suggested by the press, included monitoring the acidification of precipitation, studying both the long and short range effects of sulphur and nitrogen
dioxide in Ontario and studying the effects of acidic precipitation on lakes and fish. Other research, although mentioned less often, suggested looking towards new technological methods to solve the problem of controlling sulphur dioxide. It was suggested by the press that the economic effects of acid rain on the tourist and recreation industries in Ontario should be examined. Other recommended research included looking at studies which had already been completed in Sweden.

Besides looking towards science to stop and control the damage done by acid rain, there was also an article which suggested studying the legal structure in Scandinavia which had been established to deal with pollution problems in the region. It was thought that this research could come up with a legal solution for the acid rain problem in North America.

Instead of calling for direct research into the problem, a number of articles suggested bringing those directly involved in the acid rain crisis, such as representatives from the government, industry and environmentalists, together to share information. Another article suggested bringing technical staff from Canadian and American environmental agencies together and go over everything that is already known about acid rain.

The most frequent solution presented by the press may have been influenced by their sources of information. For example, diplomats and politicians were used most often as
sources of information. The result was that the most frequent solution offered, a treaty between Canada and the United States, followed a political perspective. The press offered little emphasis on "grass roots" solutions or what individuals could do to reduce acid rain emissions.

Public education and changing lifestyles were the two least mentioned categories for solutions to acid rain. Public education was mentioned a total of 13 times, in four out of five of the newspapers (it was not mentioned in the Sudbury Star). Changing lifestyles was mentioned just nine times, in four out of five of the newspapers (it was not mentioned in the Toronto Star).

The suggestions for public education were straightforward. In some of the articles calling for more public education, it was mentioned that once the public was more informed on acid rain, they would no longer tolerate the inaction by various levels of government in dealing with the problem. The change of lifestyle category presented by the press was also straightforward, with most of the suggestions being simply to conserve energy as a way of reducing sulphur dioxide emissions.

Change of lifestyle was the least mentioned, but perhaps the most significant category for finding a solution to acid rain. Although the suggested changes of lifestyle were vague and more suggestions could have been made, it was the only solution mentioned in the press that indicated the general
public could contribute to the battle against acid rain. For the first time, acid rain did not belong to the exclusive realm of the experts and specialists.

The frequent mentioning of political (including diplomatic and governmental) solutions to the acid rain problem is again likely due to the sources selected by the press. Stallings (1990: 87) claims that reality creation and reality perpetuation occur when journalists select their sources. The majority of the sources used by the newspapers were Canadian and American politicians and government officials (see Table 6). Stallings suggests that,

The organizational, occupational, and disciplinary points of view of those sources, transformed by reporters and editors into sentences, paragraphs, and headlines, present an account of how the world works in terms of risk and safety (1990: 87)

This would explain why political solutions were mentioned so often.

The nature of acid rain solutions presented by the press may be explained by Lowe and Morrison (1984: 79), who suggest that a critique of technological progress is implicit in many environmental events. The reporting of such events can either point out this oppositional message, or mask it through the encoding of news in terms which emphasise scientific remedies, technological fixes or simply the extraordinary (and therefore the apparently exceptional) character of environmental accidents. Much depends on the outlook of journalists and the editorial constraints upon them. The vague nature of the
solutions presented by the press may have been a veiled attempt to criticize the world of technology for not providing an absolute solution to the acid rain problem.

The print media's turning towards science for a solution to the acid rain problem may also be influenced by a common perception of science. As Sederberg (1984: 15) states,

Scientific enquiry, to be sure, is commonly seen as apolitical, objective and value free. The powerful appeal of science, and even pseudoscience, however arises not simply from its presumed ability to reveal the secrets of nature but also from its apparent capacity to resolve disputes over meaning without resource to either ballots or bullets.

It is likely that a scientific solution to the problem would be perceived as being more reliable, because it could not be influenced by outside political or industrial interests. Science is science, period.

Those Affected By and Those Creating Acid Rain.

Other major components of the print media's acid rain construction were "those affected by" and "the sources". Tables III and IV show that the press have overwhelmingly presented Ontario as an area affected by, and the United States as an area responsible for, acid rain.
Table III: Percentage of Areas Affected by Acid Rain as Listed in Five Ontario Newspapers From January 1, 1979 Until December 31, 1979.

<table>
<thead>
<tr>
<th>AREAS</th>
<th>W.S.</th>
<th>T.S.</th>
<th>G.M.</th>
<th>S.S.*</th>
<th>O.C.</th>
<th>Total Mentions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(8)</td>
<td>(5)</td>
<td>(1)</td>
<td>(2)</td>
<td>(4)</td>
<td>(20)</td>
</tr>
<tr>
<td>N. America</td>
<td>10.4</td>
<td>5.5</td>
<td>1.3</td>
<td>5.1</td>
<td>7.1</td>
<td>5.8</td>
</tr>
<tr>
<td></td>
<td>(15)</td>
<td>(6)</td>
<td>(12)</td>
<td>(5)</td>
<td>(7)</td>
<td>(45)</td>
</tr>
<tr>
<td>Canada</td>
<td>19.5</td>
<td>6.3</td>
<td>15.8</td>
<td>12.8</td>
<td>12.5</td>
<td>13.1</td>
</tr>
<tr>
<td></td>
<td>(31)</td>
<td>(70)</td>
<td>(28)</td>
<td>(19)</td>
<td>(25)</td>
<td>(173)</td>
</tr>
<tr>
<td>Ontario</td>
<td>40.3</td>
<td>73.7</td>
<td>36.8</td>
<td>48.7</td>
<td>44.6</td>
<td>50.4</td>
</tr>
<tr>
<td>Quebec &amp;/or Maritimes</td>
<td>6.5</td>
<td>1.0</td>
<td>14.5</td>
<td>15.4</td>
<td>12.5</td>
<td>8.7</td>
</tr>
<tr>
<td>Other Provinces</td>
<td>2.6</td>
<td>1.0</td>
<td>6.6</td>
<td>7.7</td>
<td>5.3</td>
<td>4.1</td>
</tr>
<tr>
<td>U.S.</td>
<td>14.3</td>
<td>11.6</td>
<td>14.5</td>
<td>7.7</td>
<td>14.5</td>
<td>12.8</td>
</tr>
<tr>
<td>Scandinavia</td>
<td>6.5</td>
<td>1.0</td>
<td>10.5</td>
<td>2.6</td>
<td>3.6</td>
<td>5.0</td>
</tr>
<tr>
<td>Total Percent**</td>
<td>100.1</td>
<td>99.9</td>
<td>100.0</td>
<td>100.0</td>
<td>99.9</td>
<td>99.9</td>
</tr>
</tbody>
</table>

W.S.=Windsor Star.
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*nb. newspaper only published eight months of the year due to a strike.
**nb. Totals may not equal 100 percent because of rounding.
Table III shows the locations affected by acid rain. They have been placed into the most specific category possible. For example, if Trenton, Ontario had been listed as being affected by acid rain it would be listed under "Ontario", even though it would also qualify for the "North America" or "Canada" categories.

Ontario was mentioned in 173 out of 209 articles as being affected by acid rain. This was more often than all other areas combined. The next most frequently listed areas were Canada and the United States mentioned 45 and 44 times respectively.

The frequency of Ontario being mentioned as an area affected by acid rain is likely because the newspapers attempted to frame acid rain as a hazard affecting the province. According to Stallings (1990:1 81) occurrences become defined as hazardous events when they question, or become the basis for questioning, the taken-for-granted safety of the everyday world and our routine activities within that world.

Gould (1993: 159) suggests that the social visibility of contamination increases the local awareness of the existence of environmental degradation. Even though an environmental problem may not be detectable by the human senses, Gould claims that increased access to certain information (the press, environmental organizations, other sources), makes an
environmental problem more socially visible, in a secondary sense, by allowing people to recognize either the existence or impacts of particular environmental threats.

Another major component of the print media's acid rain construction involved reporting who the sources of emissions were. Table IV lists those who the press claim are responsible for the production of acid rain. The list is divided into geographical areas and specific company names. Like Table III, the locations have been placed in the most specific "geographic area" category possible. Company names were included to show how often Inco was used as an acid rain source.
Table IV. Percentage of Those Responsible for Producing Acid Rain as Listed in Five Ontario Newspapers, From January 1, 1979 Until December 31, 1979.

<table>
<thead>
<tr>
<th>AREAS</th>
<th>W.S.</th>
<th>T.S.</th>
<th>G.M.</th>
<th>S.S.*</th>
<th>O.C.</th>
<th>Total Mentions.</th>
</tr>
</thead>
<tbody>
<tr>
<td>N. America.</td>
<td>4.5</td>
<td>3.5</td>
<td>8.0</td>
<td>19.5</td>
<td>23.5</td>
<td>10.7 (31)</td>
</tr>
<tr>
<td>Great Lakes Region.</td>
<td>0.0</td>
<td>1.7</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.3 (1)</td>
</tr>
<tr>
<td>Canada.</td>
<td>34.3</td>
<td>3.5</td>
<td>8.0</td>
<td>2.4</td>
<td>13.7</td>
<td>13.4 (39)</td>
</tr>
<tr>
<td>Ontario.</td>
<td>14.9</td>
<td>19.3</td>
<td>18.7</td>
<td>14.6</td>
<td>15.7</td>
<td>16.8 (49)</td>
</tr>
<tr>
<td>U.S.</td>
<td>34.3</td>
<td>42.1</td>
<td>33.3</td>
<td>29.3</td>
<td>31.3</td>
<td>34.4 (100)</td>
</tr>
<tr>
<td>Other Countries.</td>
<td>3.0</td>
<td>0.0</td>
<td>4.0</td>
<td>2.4</td>
<td>2.0</td>
<td>2.4 (7)</td>
</tr>
<tr>
<td>Algoma Steel.</td>
<td>0.0</td>
<td>0.0</td>
<td>1.3</td>
<td>2.4</td>
<td>0.0</td>
<td>0.7 (2)</td>
</tr>
<tr>
<td>Falconbridge.</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>2.4</td>
<td>0.0</td>
<td>0.3 (1)</td>
</tr>
<tr>
<td>Inco.</td>
<td>7.5</td>
<td>22.8</td>
<td>24.0</td>
<td>26.8</td>
<td>11.8</td>
<td>18.2 (53)</td>
</tr>
<tr>
<td>Ontario Hydro.</td>
<td>1.5</td>
<td>7.0</td>
<td>2.7</td>
<td>0.0</td>
<td>2.0</td>
<td>2.7 (8)</td>
</tr>
<tr>
<td>Total Percent.**</td>
<td>100.0</td>
<td>99.9</td>
<td>100.0</td>
<td>99.8</td>
<td>100.0</td>
<td>99.9</td>
</tr>
</tbody>
</table>

W.S.=Windsor Star.
T.S.=Toronto Star.
G.M.=Globe and Mail.
S.S.=Sudbury Star.
O.C.=Ottawa Citizen.

*nb. newspaper only published eight months of the year.
**nb. Totals may not equal 100 percent because of rounding.
The most frequently mentioned source of acid rain listed by the press was the United States. Like the other "area" categories, it includes actual cities and states. The only two locations that were mentioned more than two times were the Ohio Valley (five times) and Chicago (three times). The five Ontario newspapers appear to have selected the United States and Sudbury's Inco smelter as the two scapegoats for Ontario's acid rain woes. At the same time, the press has overlooked the majority of this province's other acid rain contributors.

Since Inco is reported to be the largest single source of sulphur dioxide pollution in North America, it was virtually the only company named by the press as being an acid rain producer. Only three other companies were mentioned: Ontario Hydro, Algoma Steel and Falconbridge, mentioned eight times, two times and one time respectively.

Inco and the United States may also have been chosen as "scapegoats" because as Lowe and Morrison (1984: 79) suggest, the reporting of environmental occurrences inevitably deploys powerful cultural symbols, such as nature, the countryside, and the historical heritage, which are already endowed with strongly anti-industrial connotations. In addition, popular sentiment towards the environment ensures that many issues have a strong emotive appeal which can be presented as a simple conflict of good versus evil. The portrayal of the United States as an environmental villain uses a familiar
stereotypical formula; a helpless Canada is powerless to defend its cherished, pristine wilderness from the polluting, profit hungry industrialists south of the 49th parallel. In this scenario, the only solution to acid rain is to have the United States reduce its emissions.

Besides singling out Inco and the United States, the press also suggested that Ontario's acid rain problems could be solved simply by shutting Inco down or by signing a treaty with the United States. These solutions may have improved acid rain conditions in the province, but it would not have entirely solved the problem.

The United States and Inco scenarios presented by the press were not identical, but are similar in their simplicity. In both instances, the sources and solutions to the problem presented by the press were simple and straightforward. The press avoided defining other more complicated social and technological events as causal factors. This rather simple construction of reality by the press may be explained by Spencer and Triche (1994: 211) who claim that the media have a preference for monocausal or consistent definitional frames. In their study of differential framings of hazardous events, they found that rather than constructing long and complex causal networks, the newspaper reports constructed specific and limited interpretive frameworks for each event.

The impact of acid rain was the final category used by this thesis to analyze the acid rain data. The actual and
potential effects of acid rain were portrayed as having the greatest impact on fish and lakes, which were mentioned in 172 articles. The next closest sub-category consisted of soil, forests and agriculture, mentioned in 69 articles. The only sub-category dealing specifically with effects on humans was "society and human health". Although this sub-category was the third most often, it was only mentioned a total of 42 times in the 209 acid rain articles.

The construction of acid rain presented by the press was confusing and sometimes contradictory. The different perspectives offered by the various sources used by the press may have contributed to the confusion. As the year went on, the press presented an assortment of perspectives offered by various representatives from the scientific and industrial communities.

Some versions of acid rain were mentioned more frequently than others. This unbalanced presentation of the various perspectives may suggest that the press had some influence on the structure of the acid rain reality. The assortment of realities may be explained by Westergaard (1977: 110), who suggests that the press is seen as part of a machinery "by which rival pressures and policy proposals are expressed, made known, brought to arbitration."

Analysis has shown instances where the perspectives of several different interests are represented in a single article. For example, a Toronto Star article (October 16,
1979: A10) listed the following sources of acid rain: Canada, the United States, Canada and the United States, the American industrial heartland, Ontario, Ontario Hydro, privately owned American power plants and Inco at Sudbury. Different reports were cited as identifying different sources of acid rain. A joint Canada-United States committee of scientists blamed Canada and the United States for acid rain emissions in their first report on acid rain,

... Canada and the U.S. together are spewing out 30 million tons of acid rain-causing air pollution per year. Five sixths of it comes from the U.S. sources and lands all over North America.

The article reported that the Americans admitted that they are part of the problem (U.S. industrial heartland), however,

...according to the new report most of the pollution causing acid rain in Ontario is produced here.

Some American complaints against Canada were more specific,

But the two countries have also been trading polite rejections of each others claims over a giant Ontario Hydro coal-fired power plant to be built--without pollution scrubbers--at Atikokan in northern Ontario. The Americans say it will cause acid rain. Hydro says no.

Barbara Blum, deputy administrator of the EPA and a close Carter advisor also blamed a specific company operating in Canada.

"You Canadians have got a real problem up there--the biggest single source (of acid rain causing pollution) in the world, (Inco)."

The article listed owners of privately owned coal plants in
the United States, specifically Ohio, as a major source of acid rain pollution

Action to clamp down could mean a year or more of hearings with tough opposition from the privately owned power plants, and their suppliers of cheap, dirty eastern U.S. coal.

The industry is vehemently opposing the several-billion-dollar cost of cleaning up their dirty old power plants. Ohio, the state with most of the worst plants, even refuses to meet standards of cleanliness for new plants.

The most often mentioned cause of acid rain was sulphur and nitrogen oxides, which are the result of the burning of fossil fuels. Ontario was the area most affected by acid rain and the United States was the largest cause of acid rain pollutants. Only an international agreement between Canada and the U.S. would solve the problem. Political reasons allowed acid rain to continually be produced and objects that were affected the most by acid rain included fish and lakes.

Oddly enough there was silence from those industries which are directly affected by acid rain such as fishing and forestry. It is likely that major fishing companies would not complain about the potential long term affects of acid rain as long as they were catching enough fish to meet their quotas.

According to Forster (1993: 50), during the 1980s, the forest products industry itself saw no reason to believe that acid rain posed any threat to forest resources. He claims that a possible explanation for this belief is that the losses to the forest sector caused by fire, insects and disease are large compared to suspected damage attributed to acid
deposition. For example, in Canada, in 1980-81 the average annual loss of commercial timber from these so called "natural" causes amounted to between 50% and 66% of net production levels.

The reality of acid rain appears to be the result of images constructed by the press and presented to the public in the context of news. Lowe and Morrison (1984: 79) suggest that much of what is considered newsworthy and how that news is presented to the public will depend on the outlook of journalists and the organizational and editorial constraints upon them. Spencer and Triche (1994: 211), follow a similar perspective, claiming that previous research suggests that media definitions of risk and safety depend on the influence of news sources, as well as political and economic considerations.

News organizations are one of the most significant actors involved in the social construction of risk (Short, 1984: 721). By selecting events to report, by interviewing and quoting experts who interpret those events, and by assembling and distributing news products, news organizations create an important component of public discourse referred to as media discourse (Gamson and Modigliani, 1989: 3).

It is not known which acid rain articles were not considered newsworthy and omitted from being printed. Lester (1980: 985) states that newsworkers view their work in terms of selecting the most important events, and portraying those
in an interesting and informative way. She also claims that journalists' conceptions are paralleled by gatekeeping, a dominant sociological perspective, which suggests that events are successively filtered through a set of news gates.

**POLITICAL INFLUENCE AND THE CONSTRUCTION OF ACID RAIN.**

In 1979, the Ontario environment minister Harry Parrott was a major source of acid rain information for the Ontario press. In the 209 acid rain articles, he was used as a source 29 times. Only federal environment minister John Fraser was used more often (45 times). Mr. Parrott was also the first source of information used when the press decided that acid rain was newsworthy in February, 1979. Although Parrott was often used as a source of information, his acid rain constructions appeared to change dramatically. In some instances, his constructions would change for a period of time, only to change back to their original versions.

As environment minister, it was Parrott's job was to interpret the data presented to him by the scientists and researchers of his ministry. He was also responsible for passing the information on to the Premier, provincial parliament and the general public. Although there was limited knowledge available about acid rain, the press deemed the environment minister as a reliable source of acid rain information.

The relatively easy access of Parrott, as a provincial
politician, also contributed to him frequently being used as a source of information by the Ontario press. Environment ministers from the other provinces were not used as sources of information in any of the five newspapers.

The following table (Table V) provides a brief example of the changes in Parrott's acid rain constructions. Column A represents some of Parrott's original constructions and Column B shows how these constructions have changed as the year went on.

As more information was made available, it was possible that the social construction of acid rain would change for both experts and non-experts alike. However, as can be seen from Table V, in the case of Mr. Parrott, there were a number of instances where portions of his acid rain construction were modified, only to return to their original version at a later point in time.

<table>
<thead>
<tr>
<th>A.</th>
<th>vs.</th>
<th>B.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acid rain portrayed as a major environmental disaster (Windsor Star, February 6, 1979: 38).</td>
<td>Ontario must seek balance between ecology and economy (Sudbury Star, November 5, 1979: 5).</td>
<td></td>
</tr>
<tr>
<td>Inco not a contributor to acid rain (Sudbury Star, February 6, 1979: 2).</td>
<td>Government is willing to shut Inco down (Globe and Mail, October 17, 1979: 1).</td>
<td></td>
</tr>
<tr>
<td>Ontario will do whatever is necessary to solve the acid rain problem (Windsor Star, August 10, 1979: 2).</td>
<td>Ontario will not act against its own industries that emit acid rain pollutants (Globe and Mail, October 17, 1979: 1).</td>
<td></td>
</tr>
<tr>
<td>Ontario will not act against its own industries that emit acid rain pollutants (Globe and Mail, October 17, 1979: 1).</td>
<td>Ontario would order whatever steps necessary to meet international commitments Ottawa Citizen, October 23, 1979: 18).</td>
<td></td>
</tr>
</tbody>
</table>
The following excerpts are from the acid rain articles which used Harry Parrott as a source of information. Although the excerpts do not depict his total construction of acid rain, they represent the portions that had changed throughout 1979 (again, see Table V for an overview).

His first construction of acid rain portrayed it as a major environmental hazard threatening Ontario. He was speaking to the resources development committee of the Legislature on February 6, 1979.

Ontario Environment Minister Harry Parrott said Monday that Ontario is losing its lakes to acid rain, and only action in an international scale can stop it.

He (Parrott) told the legislature's resource development committee that 140 lakes in many areas of Ontario have already suffered from acid rain and a further 48,000 lakes will go the same way over the next two decades unless the situation changes (Windsor Star, February 6, 1979: 38).

The Toronto Star also reported on the potential impact of acid rain on the province's tourism and recreation industries.

I can't begin to assess the economic impact of this (acid rain) on our tourism and recreation industries and on the thousands of people employed in these industries. I've heard guesses ranging as high as half a billion dollars (Toronto Star, February 6, 1979: A2).

Acid rain pollution coming from Ontario was considered to be negligible. It was reported that if every source of acid rain pollution was eliminated from Ontario, there would be virtually no impact on the acidity of the precipitation falling on the province. Even the emissions from Inco were considered to have little effect. Ontario was framed as a
victim of American produced acid rain, but not as a contributor to the problem.

But he said the problem has to be resolved in the northeastern United States because ministry studies show that's where the pollutants come from.

If we eliminate every Ontario source of sulphur and nitrogen oxides, it would have virtually no impact on the continuing damage to our lakes. We produce less than three million tons in Ontario as compared to a total of 39 million tons in the northeastern U.S. (Globe and Mail, February 6, 1979: 2)

The only company mentioned by name was Inco. The Sudbury Star reported that the company was not considered an acid rain producer.

Inco emissions had little effect on Ontario's environment, Parrott said, and a complete halt of Inco operations would make little difference to the environment (Sudbury Star, February 6, 1979: 2).

Months later on July 17, 1979, Parrott admitted, during an interview with a Toronto Star reporter, that Ontario was at least partly responsible for contributing to the acid rain problem. In the article, Parrott claimed that Ontario industries are not blameless and steps were being taken to improve their performance. Inco was mentioned as being one of those industries. Parrott said that he planned to meet with Inco officials within ten days to discuss some "tough but reasonable" new targets for the company.

Ontario industries are not blameless, and we are taking steps to improve their performance.

Parrott said 7 to 10 per cent of Ontario's acid rain comes from provincial industries, especially Inco's Sudbury operations. He said that he will meet Inco officials within ten days to discuss "tough but reasonable" new targets for cleaning up their act
(Toronto Star, July 17, 1979: A1).

On August 10, 1979, an article covering a John Fraser (Federal Minister of the Environment) press conference reported that Parrott said the province would do whatever was necessary to meet emission standards imposed on the province by the federal government. Ontario was still constructed as a desperate acid rain victim that would do whatever it took to solve the problem.

Fraser said Thursday after a conversation with Ontario Environment Minister Harry Parrott that Ontario will fulfil the commitments which are considered necessary...and they will apply diligently those means which (are) decided under the agreement must be imposed on sources of emissions in Ontario (Windsor Star, August 10, 1979: 2).

Three months later, the press presented a solution to acid rain that went beyond rhetoric and involved taking action towards solving the problem. Ontario would have to start reducing its own industrial emissions. While addressing the Ontario Legislature, Parrott responded by stating that he would not act against Ontario industries that emitted acid rain pollutants. Such action would put the industries in question at an unfair disadvantage, compared to industries outside of the province that did not have controls on their emissions. Parrott's portrayal of Ontario as a helpless acid rain victim, willing to do whatever was necessary to fight the problem, had changed. Suddenly, the battle against acid rain appeared less urgent.

Environment Minister Harry Parrott said yesterday the provincial Government is not prepared at the moment
to clamp down on Ontario companies that emit pollutants that cause acid rain.

Dr. Parrott made his first announcement in the Legislature, saying it would be unfair to curtail industry until an agreement is reached on the issue of acid rain.

On the subject of clamping down on industry, he (Parrott) said: "You can't clamp down on industry, 'You alone must tackle the question.'" He was replying to opposition questions about why he does not slap tougher emission control orders on Inco Ltd. in Sudbury.

Dr. Parrott said, another study indicates that most of the problem originates in the United States. He said the study, undertaken in the Muskoka area, looked not only at the effects of sulphur compounds, but also the effects of nitrous acid. He said the study found that 80 per cent of acid rain fall came from outside of Ontario (Globe and Mail, October 17, 1979: 1).

Less than a week later, in an Ottawa Citizen article, Parrott appeared to "flip-flop" again while speaking in the legislature. Now Ontario would be willing to go as far as ordering the temporary shut down of Inco, if necessary, to live up to an international agreement on acid rain.

Ontario would be willing to order temporary shutdowns of Inco Ltd.'s huge Sudbury smelter if necessary to live up to international agreements to reduce acid rain, Harry Parrott said Monday. He said he would order whatever steps necessary to meet international commitments (Ottawa Citizen, October 23, 1979: 18).

Three days later, on October 26, 1979, while speaking to the Legislature's resources development committee, Parrott's construction in the acid rain debate would take a major shift. In the Toronto Star, he conceded that Ontario was a contributor to the acid rain problem in certain areas of Canada and the United States.

Conceding that in certain areas of Canada and the
United States, Ontario "is a contributor" (Toronto Star, October 26, 1979: A15).

The Globe and Mail also carried an article, where Parrott claimed that the province was prepared to act "single handed" if necessary to reduce acid rain pollution from Ontario companies. Parrott's portrayal of Ontario had changed from an acid rain victim to an acid rain villain. However, the province was once again willing to do what ever it takes to reduce acid rain emissions.

Ontario is "prepared to act singly and in advance of the jurisdictions" to reduce pollution from Ontario companies that cause acid rain, Environment Minister Harry Parrott said last night (Globe and Mail, October 26, 1979: 5).

Parrott's presentation of an Ontario willing to act alone, despite the costs, in the fight against acid rain was short lived. On November 5, 1979, while addressing a three day acid rain conference in Toronto, Parrott told the delegates that Ontario was caught in the bind of maintaining the delicate balance between the ecology and the economy.

In a speech to delegates, Parrott said, "Like Americans, we are caught in the same bind: how to achieve that delicate balance between ecology and economy (Sudbury Star, November 5, 1979: 5).

Two days later on November 7, 1979, Parrott introduced a new excuse for Ontario not taking greater action against acid rain, during an addressing of the Ontario Legislature. This time it was not a case of environment versus the economy, but a case of technology not being able to provide a suitable solution to the problem. The scenario changed from Ontario not
taking action because of high costs, to Ontario not taking action because of the disadvantages of the available technology.

High costs are not the only thing standing in the way of cleaning up emissions that cause acid rain, says Ontario Environment Minister Harry Parrott. "There is a complicated problem of what to do with the material once it is removed from the atmosphere." (Sudbury Star, November 7, 1979: 3).

An editorial in the Ottawa Citizen points to another major change in Parrott's construction of acid rain. In less than a year, Parrott's construction had gone from a serious environmental threat, that had killed 140 Ontario lakes and threatened 48,000 more, to an environmental problem that did not really kill lakes, but simply over-acidified them.

While most speakers at the recent seminar on acid rain were desperately trying to convey the seriousness of this environmental problem, Parrott was one of the few who played it down.

He said emotions had resulted in some popular misunderstandings about acid rain and wanted to "debunk some of the myths," especially the one involving "so called 'dead lakes.'"

No matter that scientists freely discussed "dead" lakes where excess acidity had destroyed fish populations. Parrott instead referred to these lakes as being over-acidified," apparently believing that in Ontario's lakes there can be life after death if the government says so. He even made the curious observation that "the acidified lake is safe for swimming, boating and other sports.

But Parrott, ever the picture of sunshine, suggested that susceptible lakes take five to 20 years to die. "Valuable time can be on our side," he declared (Ottawa Citizen, November 9, 1979: 6)

Parrott's depiction of Ontario had completely changed from February. The province had been transformed from a
helpless victim of American acid rain to an acid rain producer, just like the villainous Americans. Not only did Ontario produce acid rain like the Americans, but now the province had the same excuses for not cleaning up the problem that the Americans had.

It has been demonstrated that the definition of social objects can be volatile. The definition of objects change as our use for the object changes. Mr. Parrott's definition of Ontario's role in acid rain continued to change throughout 1979.

When Parrott's construction of acid rain was first reported by the press, it was framed as a terrible threat to the future of the province of Ontario. Such dire predictions may or may not have been exaggerated, but nonetheless added to the newsworthiness of the acid rain story. A fundamental difficulty with acid rain, and other environmental issues, has been that while environmental degradation tends to be a drawn-out process which is not clearly visible, the media feed upon short, sharp, highly visible events (Schoenfeld et al., 1979: 50). Therefore, it was in the environment minister's best interests to get acid rain into the press as often as possible. Coverage would not only draw attention to the acid rain crisis, but draw attention to the ministry of the environment as well. Another advantage of press coverage would be increased public pressure on the Liberal federal minister of the environment for a negotiated settlement with the United
States.

Once acid rain had obtained coverage by the mainstream press, the dire threats which had helped Harry Parrott and the Ministry of the Environment to make headlines, began to work against him. Now the public had been made aware of the seriousness of the problem, which had in part been constructed by Parrott. They had also been made aware that Ontario was part of the problem and now demanded action.

Harry Parrott and the Conservative provincial government had basically two choices: they could act on controlling acid rain or they could simply re-define the problem. Attempting to control acid rain could be financially costly. As well, there could also be a political price to pay if the controls resulted in job losses or increased taxes.

The acid rain policy of the provincial Conservatives was never presented as such, in any of the five newspapers. However, a quote attributed to Premier William Davis which appeared in the October 27, 1979 edition of the Toronto Star appeared to indicate where the party stood with respect to acid rain.

The Ontario government won't force Inco Limited into pollution control that jeopardizes the Sudbury nickel mining company's security (Toronto Star, October 27, 1979: A17).

On the same day, the Globe and Mail reported, that the Premier had enunciated a policy on acid rain that seems at best to promise slow action on a pollution cleanup. The Premier was also quoted as saying
Acid rain is a problem recognized only recently, and scientists are still debating to what extent sulphuric acid emissions are the real villain. Other agents such as nitrous oxides (sic) may even be more important (Globe and Mail, October 27, 1979: 13).

Harry Parrott's original construction of acid rain differed from the construction presented by Premier, William Davis. Even though Mr. Parrott was the environment minister, in charge of the environmental well-being of the province, he would still have to bring his construction of acid rain more in line with the Premier's. Failure to "tow the party line" could result in negative sanctions being placed against Parrott by his own party.

In 1995, the federal minister of the environment may be facing the same sort of pressure from her own party for being "too ambitious." An article appearing in the Toronto Star on July 15, 1995 reported that Sheila Copps had taken a series of unexpected strong positions in recent months, on everything from climate change to the federal role in environmental assessment. But there was speculation that her new combativeness could cost her the environment minister's job just as she was beginning to show some passion for it. The article claimed that there were persistent rumours that Copps will be shuffled out of the portfolio, either this summer, or later in the fall.

It appears that by the end of 1979, political pressures had changed Harry Parrott's construction of acid rain. It was no longer an urgent environmental threat. Now it had become a
less serious environmental problem that would take between five and 20 years to affect the province. This new definition allowed the provincial government to reduced the severity of the problem and the expectations that the public might have of the government taking immediate action.

THE ENVIRONMENT BECOMES NEWS.

THE ONGOING CONSTRUCTION OF ACID RAIN.

This section of the thesis will examine how the print media's reporting and public perception of an event influence the continuing construction of the occurrence. For example, there have been a number of themes which have been mentioned in the early construction of acid rain which continued to be mentioned in many subsequent articles.

Although acid rain was not a sudden crisis, it was not considered by the press to be newsworthy until February, 1979. The result was the public being informed about the crisis for the first time, on a relatively regular basis, by the mainstream press. In other words, acid rain was not sudden, but information released to the public was.

Acid rain articles written by Toronto Star environmental reporter, Ross Howard were examined for repeated cultural themes. Howard was selected because he had the most acid rain articles published of all the reporters in the newspapers selected for study. He had a total of 15 acid rain articles printed throughout 1979.
There were a total of 47 different themes found in Howard's acid rain articles. Four of the most frequently mentioned themes were found in his first acid rain article in February and continued to reappear throughout the year. The themes were as follows: 1) "More than 140 lakes in central Ontario are dead and 48,000 lakes doomed within 20 years unless acid rain is turned off;" 2) "The acids kill fish and aquatic life, increases poisonous metals such as mercury and manganese in the water and fish, and may also slowly destroy vegetation and forests;" 3) "The cause of acid rain is a combination of sulphur dioxide and nitrogen oxides emitted from various sources;" and 4) "The United States is mostly to blame for the acid rain problem."

Acid rain articles seldom dealt solely with acid rain. Other associated issues were covered throughout the year. Some of the issues were expected and predictable, such as warning about the long and short term effects of acid rain on Ontario or reporting on the emissions from the Inco smelters in Sudbury. Some suggested solutions to the problem, others criticized Inco and the provincial government for not acting fast enough to reduce emissions.

There were also acid rain issues which were not so predictable or expected, such as the Ontario Cottager's Association complaining to the provincial government about the effects of acid rain on their cottage areas and life style. Other unexpected issues included the effects of America's new
energy policy on acid rain levels in Ontario and the power of the U.S. coal producer's lobby.

It appears as if the very reporting of acid rain had resulted in the press further exploring other associated issues which may not have been considered newsworthy outside of an acid rain context. For example, the amount of emissions from the Inco smelter in Sudbury would have likely been of little concern to the general public, until the press became concerned with acid rain and pointed out the relationship between the two.

The literature review suggested that the reporting of certain facts by the media can be sufficient to generate concern, anxiety, indignation or panic. Cohen (1972: 49) claims that once the initial impact of an article has passed over, the societal reaction to a sudden event, particularly if it is perceived as a dislocation of the social structure or a threat to cherished values, is an attempt to make sense out of what has happened. Public and media discourse tend to be more about the implications rather than the actual event itself.

Pre-existing images in a framework which has already been established are used by the media to explore the implications and associated issues of an event which has occurred (Halloran et al., 1970: 26). If the event is new, the reporting will resonate with larger cultural themes, using familiar imagery and symbolism. The four most frequent themes found in Howard's articles followed familiar cultural resonances typical to
environmental stories and to other constructions of acid rain, such as nature being threatened by the onset of technology in the United States.

NON-NEUTRALITY OF THE MEDIA.

SOURCES AND THE CONSTRUCTION OF ACID RAIN.

As was mentioned in the literature review, the relationship between the journalist and their sources of information will have an influence on what does and does not get reported in the press. Different sources have different perspectives. This section of the thesis is concerned with who the sources are and their social constructions of acid rain.

The complexity of acid rain has resulted in many complicated and conflicting perspectives leading to the construction of acid rain by the press. There is no criterion for one social construction being more correct than the other. There is the potential that any acid rain construction appearing in a newspaper may influence the reader, therefore, any construction must be considered relevant. However, sources quoted most often by the press would have the best chance of having their construction of acid rain being accepted as definitive by the public.

In February, 1979, the press first began to report regularly on acid rain. At the time, the general public had no preconceived notions concerning the subject because there was very little information available. Acid rain was considered a
recent, virtually invisible environmental hazard. This lack of a "stock of knowledge" meant that the public would have to rely on the acid rain constructions presented by the information sources used by the press. These constructions were the result of different perceptions, interests, misunderstandings or half truths.

The literature review explains that there are various criteria used by the press in determining who they would use as sources of information. It was assumed that the reporters would most often turn towards "official sources", such as government officials, scientists and industry representatives, for information about acid rain.

The sources of information used by the five newspapers examined in this thesis were placed into one of five categories. The categories included political representatives, industry representatives, the scientific community, private environmental organizations and private citizens. The political representatives were further broken down into four sub-categories; Canadian politicians, Canadian government officials, American politicians and American government officials. The scientific community category was also broken down into Canadian scientists, American scientists and scientists whose national identity was unknown.

Table VI has been used to indicate the distribution of sources used by the newspapers. The table shows the distribution of the categories of sources among the total
sources of information used by the press. The table also shows the distribution of the sub-categories of sources as they pertain to each category.

It shows that politicians and government officials were the most frequently used sources by the press for information about acid rain. This finding supports the work by other theorists (Gans, 1979; Sigal, 1973; Friedman, 1991) who claim that journalists tend to rely on official sources and routine channels. Sigal (1973: 125) claims that official sources are so popular among journalists because of standard newsgathering techniques and routines. Friedman (1991: 22) explains that government officials are considered credible and authoritative; they are often easy to reach, and many are used to talking to reporters. Industry officials, scientists, environmental organizations and private citizens ranked far behind in being used as sources for the media.
Table VI: Percentage of Sources and Articles Used by the Press in Acid Rain Construction From January 1, 1979 Until December 31, 1979.

<table>
<thead>
<tr>
<th>Categories</th>
<th>Per Category Sources/Articles</th>
<th>Per Total Sources/Articles</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Political Representatives</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Canadian Politicians.</td>
<td>24.7 (20)</td>
<td>53.3 (81)</td>
</tr>
<tr>
<td>Canadian Government Officials.</td>
<td>44.4 (36)</td>
<td>65.9 (232)</td>
</tr>
<tr>
<td>American Politicians.</td>
<td>6.2 (5)</td>
<td></td>
</tr>
<tr>
<td>American Government Officials.</td>
<td>24.7 (20)</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100.0 (81)</td>
<td>100.0 (232)</td>
</tr>
<tr>
<td><strong>Industry Representatives</strong></td>
<td>100.0 (8)</td>
<td>5.3 (8)</td>
</tr>
<tr>
<td><strong>Scientific Community</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Canadian</td>
<td>46.4 (13)</td>
<td>18.4 (28)</td>
</tr>
<tr>
<td>American</td>
<td>25.0 (7)</td>
<td>16.8 (59)</td>
</tr>
<tr>
<td>Nationality Unknown.</td>
<td>26.8 (8)</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100.0 (28)</td>
<td>100.0 (59)</td>
</tr>
<tr>
<td><strong>Environmental Organizations</strong></td>
<td>100.0 (18)</td>
<td>11.8 (18)</td>
</tr>
<tr>
<td><strong>Private Citizens</strong></td>
<td>100.0 (17)</td>
<td>11.2 (17)</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>100.0 (152)</td>
<td>100.0 (352)</td>
</tr>
</tbody>
</table>
Canadian politicians were the most frequently used sources by the Ontario press. This finding is not surprising because the newspapers studied were from Ontario, and Ontario reporters would have fairly easy access to the federal sources in Ottawa and to the provincial sources in Toronto. Wire services such as CP would also have regular reporters in the national and provincial capitals. A number of researchers suggest that journalists are more likely to select news sources from organizations that are easily accessible (Gans, 1979: 124; Molotch and Léster, 1975: 255). Access to American diplomats in Washington would likely not be as easy for some Canadian reporters. However it is likely that access to American diplomats attending diplomatic functions or acid rain information forums would be relatively easy, with the Americans eager to explain their own perceptions of acid rain.

The scientific community was the second most frequently used group of sources used by the press. This finding was also not unusual. Members of the scientific community could easily be approached for information at any one of the many public forums on acid rain. It is also likely that a reporter could find easy access to a member of the scientific community with acid rain knowledge, simply by making contact with a science faculty at any major Canadian university. Mazur (1981: 106), claims that the proximity of a source's institution will influence whether or not they are selected by journalists as
sources of information.

One surprising finding was the relatively low number of industry representatives used by the press. These consisted mostly of Inco spokespersons. In the construction of acid rain that was presented to the public, Inco was mentioned much more often than any other company as an acid rain polluter. The company was also mentioned as being the largest producer of sulphur dioxide emissions in North America and the world.

Ontario Hydro, a Crown corporation owned by the government of Ontario, was a major acid rain polluter hardly mentioned by the press. It was perhaps not surprising that the provincial minister of the environment would not draw attention to his own government by pointing out that his own government was also responsible for producing the acid rain crisis. It seems reasonable to assume that their representatives would have avoided defining these institutions as major causal agents (Douglas, 1985: 85).

As expected, the constructions of acid rain presented by the different sources were not identical. As was mentioned in the literature review, each of the competing advocacy networks must make strategic choices in their symbolism as they attempt to get their preferred world view validated as truth.

This research has found that the sources used by the press have presented a number of different perspectives in the creation of acid rain. This assortment is the result of the various interests and perspectives of the sources used by the
press. It is possible that some perspectives may be in direct conflict with each other; for instance, a broad example could be made comparing the perspectives on acid rain held by an environmentalist and those held by an industrialist. The environmentalist may see acid rain as a major environmental threat, that must be controlled. However, the industrialist may see the causes and effects of acid rain as being unknown, and until they are known there would be little sense in implementing controls which could result in reduced profits and layoffs. Even such a simple example, using the possible perspectives of the two groups, could become very complicated when applied to the many associated issues of acid rain.

An analysis has been made of some specific sources, in order to show their different acid rain perspectives and their actual constructions of acid rain. Statements by the following were analyzed (see Table VII): John Fraser, a Progressive Conservative MP and federal Minister of the Environment; Stuart Warner, Inco vice president of occupational health and the environment; Douglas Costle, administrator of the American EPA; and Harold Harvey of the University of Toronto. As well, a number of sources in the "environmental organization" category will be compared with each other.

Table VII lists the specific acid rain sources and the percentage of articles that each source represents in their corresponding category of information (refer to Table VI). Table VII also lists the percentage of total acid rain
articles that each source has been used in.
Table VII: A Comparison of Selected Sources With the Total Newspaper Sources From January 1, 1979 until December 31, 1979.

<table>
<thead>
<tr>
<th>Source</th>
<th>Percent of Articles in Category.*</th>
<th>Percent of all Acid Rain Articles.</th>
</tr>
</thead>
<tbody>
<tr>
<td>John Fraser Political Rep.</td>
<td>19.4</td>
<td>6.8</td>
</tr>
<tr>
<td>Stuart Warner Industry Rep.</td>
<td>50.0</td>
<td>2.6</td>
</tr>
<tr>
<td>Douglas Costle Political Rep.</td>
<td>2.6</td>
<td>1.7</td>
</tr>
<tr>
<td>Harold Harvey Science Community</td>
<td>11.9</td>
<td>2.0</td>
</tr>
<tr>
<td>Environmental Organizations.</td>
<td>26.9</td>
<td>2.0</td>
</tr>
</tbody>
</table>

* See table 6.
John Fraser.

John Fraser was the single most frequently used source of acid rain information used by the Ontario press in 1979. He was used as a source of acid rain information in 45 of the 112 articles which used Canadian politicians as sources of information.

Fraser was the environment minister of the Progressive Conservative party which formed the government of Canada in April of 1979. He became a newspaper source of information on July 13, 1979, when the Globe and Mail, Windsor Star, Toronto Star and Ottawa Citizen carried articles about a press conference and telephone interview given by the minister.

The press conference was called after an International Joint Commission (IJC) meeting in Detroit which identified acidic precipitation as the most pressing environmental problem facing the industrialized eastern sectors of Canada and the United States. The three articles were similar in tone. Fraser had framed acid rain as a serious environmental problem which had been given top priority by then Prime Minister, Joe Clark. The environment minister claimed that the statistics and future forecasts of the effects of acid rain were appalling. It was understood that without adequate pollution controls "within the next 10 to 20 years, 48,000 Ontario lakes will be rendered lifeless as a result of acid rain" (Windsor Star, July 13, 1979: 5).

Fraser claimed that the time for rhetoric had passed; the
time for persuasion was here. His first priority was to make people aware of the problem, claiming that public support was essential for the vast expenditures that would be needed to pay for the pollution controls. His second priority was to plan a meeting with Douglas Costle, administrator of the United States Environmental Protection Agency (EPA) to talk about the problem. One article reported that Fraser was looking for a Canada-U.S. pact similar to the Water Quality Agreement under which the two countries have pledged to save the chemically-clogged Great Lakes.

In the article, Fraser also admitted that the technology existed to reduce compounds emitted by industrial stacks, and that the government had not ordered any Canadian industries to apply it.

It was insisted that it would be pointless for Canada to enforce stricter cutbacks of airborne pollutants if American discharges remained unchanged. However, Fraser stopped short of blaming the United States. He stressed that he was not about to attach blame since industrial society in general was at fault.

A potential agreement with the United States brought Fraser to the attention of the press eight days later. On July 21, 1979 the Globe and Mail and Toronto Star carried similar articles about on-going acid rain negotiations between Canada and the United States. The Globe and Mail reported that "Canada is 'very close' to signing a diplomatic agreement with
the United States that will set the stage for a full-scale treaty to combat acid rain and other forms of international air pollution, federal Environment Minister John Fraser said yesterday" (Globe and Mail, July 21, 1979: 12). No details of the treaty were released because Fraser did not want to jeopardize the delicate negotiations between External Affairs and the U.S. State Department.

Another component of Fraser's acid rain construction became evident in a July 21, 1979 article. He acknowledged that there was some uncertainty surrounding the treaty because of President Carter's energy speech a week earlier. There was a chance that the United States government could place environmental issues on the back burner.

Those who say we must wait until after the U.S. has solved its energy policy are making a terrible error. No excuse or reason for delay is acceptable (Toronto Star, July 21, 1979: A2).

On August 8, 1979, the eve of John Fraser's departure for Washington to discuss acid rain, he suggested to reporters that Loto (sic) Canada funds be used to help alleviate major environmental problems in "the kind of imaginative, unconventional approach that may be necessary for problems of this sort (acid rain)" (Globe and Mail, August 8, 1979: 9).

The next day on August 9, 1979, the Globe and Mail, Toronto Star and Windsor Star printed articles covering a meeting between John Fraser and U.S. Interior Secretary Cecil Andrus. After the meeting Fraser continued to remain optimistic about eventually reaching an agreement with the
United States. He claimed that he was "greatly encouraged with the commitment of his U.S. counterparts to attack the problem" (Windsor Star, August 9, 1979: 30).

On August 10, 1979, all newspapers carried articles which outlined John Fraser's solution to acid rain. He said that the federal Government would unilaterally set stringent air pollution standards under the Clean Air Act if provincial governments fail to act quickly on acid rain. Although environmental regulations are traditionally a provincial responsibility, Fraser warned that the federal Government is within its constitutional rights to step in because the matter crosses provincial and national borders.

An Ottawa Citizen article on August 15, 1979 used Fraser as a source of information and put actual numbers on the North American production of acid rain. The environment minister estimated that Canada exports up to 1.4 million tons of sulphur dioxide south, while the United States sends about 4 million tons north each year. The article also pointed out that,

With an industrial plant only one-tenth the size of America's, Canada still manages to account for nearly one-quarter of the sulphur dioxide problem in the U.S. (Ottawa Citizen, August 15, 1979: 74).

Despite the fact that, according to Fraser's data, Canada's sulphur dioxide emissions were lower than the United States, Canada was still a contributor to North America's acid rain woes. The same article appeared in the Windsor Star 12 days later on August 27, 1979.
Just under a month later on September 26, 1979, in the *Globe and Mail*, Fraser appeared to contradict himself on Canada's commitment to fight acid rain. Although he continued to admit the United States had more stringent air pollution controls, he now stated that the federal Government would not introduce stricter pollution controls because they harm the competitiveness of Canadian industry. Now Fraser would only implement controls equal to that which had been implemented by the United States.

The *Windsor Star* carried an article on the same day in which Fraser placed a dollar figure on the cost of reducing sulphur dioxide emissions by 50 percent, and the amount of money that would be saved in return.

The $350 million needed annually to prevent acid rain from killing Ontario lakes would save $600 million a year in fishing revenue.

...an annual national cost of $350 million for pollution control would be minimal compared with the $5 billion estimate for similar controls in the northeastern U.S. (*Windsor Star, September 26, 1979: 43*).

A letter to the editor, written by John Fraser, appeared in the *Globe and Mail* on October 6, 1979. In the letter he criticized the implication made in a September 26, 1979 article that Canada would not act on acid rain before the United States. The letter from Fraser states,

...my position does not rule out the possibility that after careful examination of what is needed and what can be done, Canada—meaning the provinces and federal Government together—might decide that it is in our own interest to take some control action before the United States, with its somewhat less flexible legal structure, is ready to do so (*Globe and Mail, October 16, 1979: 7*).
Fraser's rhetoric appears to become more aggressive in a Toronto Star article, published 10 days later on October 16, 1979.

If we're faced with 15 more years of acid rain, and thousands of dead lakes, the Americans will see an explosion of national anger from us like they've never seen (Toronto Star, October 16, 1979: A10).

However, the article also reported that Fraser did not want to use federal power to force the provinces, particularly Ontario and Quebec, to clean up their worst air pollution sources. Instead he claimed that he was counting on the provinces to co-operate.

In an October 29, 1979 Ottawa Citizen article, Fraser again refused to solely blame the United States for North America's acid rain problems. Again he claimed that both Canada and the United States were responsible for polluting each other's land and water. Again he mentioned the seriousness of the problem, stating, "We do not have a heck of a lot of time to fool around" (Ottawa Citizen, October 29, 1979: 36). The same article appeared 10 days later in the Windsor Star.

On November 3, 1979 Fraser's enthusiasm for an acid rain agreement with the United States waned. In the article he stated that it was practically impossible to sign such an agreement until after the American presidential election the next year. However, Fraser continued that Canada must start to control the acid rain within the next two years, with or without the United States. He even became somewhat philosophical about fighting acid rain.
We've all taken benefit from industrial society. We are now faced with paying for the mistakes of the past. We can't continue to make the mistakes that will haunt our children and our children's children (Ottawa Citizen, November 3, 1979: 14).

The Sudbury Star reported that the battle against acid rain would enter another phase two days later on November 5, 1979. The newspaper stated that the Environment Minister had sent a letter to Inco, requesting that company officials meet with him for a discussion on the acid rain problem. Representatives of four of Canada's largest mining companies and Ontario Hydro were also invited.

Seven days later on November 12, 1979, John Fraser's fight against acid rain again appeared to cool. The Toronto Star quoted Fraser as saying the federal environment department does not know enough yet about acid rain to impose clean up deadlines on industries emitting the pollution. Fraser indicated that he would not take a hard line on emissions controls "until we've done the work we're doing in the coming months. I don't know enough yet. When I know it I can take a hard line (Toronto Star, November 12, 1979: A4).

On November 15, 1979, the Sudbury Star and Ottawa Citizen reported that a joint statement from John Fraser and EPA administrator Douglas Costle said that Canadian and American officials would meet next month in December to try and agree on an accelerated timetable for action to reduce the problem of acid rain. This was the last time that John Fraser was
mentioned by the press as a source of acid rain information in 1979. In December, none of the five newspapers reported anything about the meeting between Fraser and Costle.

**Stuart Warner.**

Another perspective on acid rain was offered by Inco's vice president of occupational health and the environment, Stuart Warner. Throughout 1979, Warner was the most frequently used industry source of information for the press. All five of the newspapers studied carried at least one article with him as a source. He was mentioned in a total of nine articles.

Warner's perspective on acid rain was first reported in *Toronto Star* and *Sudbury Star* on February 6, 1979. The Sudbury paper quoted Warner as saying that more research needed to be done in the area of sulphur dioxide emissions before strict controls were introduced. He also said that tests had shown that the increase in acidity of precipitation had been attributed to nitrogen oxide, but Inco's emissions were low in this chemical gas. Warner stated that he believed that there was still time to develop remedies for the acid rainfall problem and that "the absolute amount of acid falling to the earth is very small. (Sudbury Star, February 6, 1979: 2)."

On the same page of the *Sudbury Star*, there was another article titled "Research on Acid Rain Aided by Lottery Grant." This article also used Stuart Warner as a source of information. The article reported that Warner said that
evidence heard by the Ontario legislature's resource development committee had shown that experts were wrong in 1970 when they assumed that acidity in the lakes near Sudbury was the direct result of sulphur dioxide emissions from Inco's smelter. Warner also said if the ministry had held the company to the original (control) order it would have meant closing seven of Inco's 10 operating mines, four of its plants and parts of two others and reducing its work force to 6,500 from 11,000.

Only the Toronto Star quoted Warner as saying that the only way that Inco could reduce their present 3,600 ton-per-day limit would be by spending more that $250 million or by cutting back production. He also said that Inco had voluntarily cut its emissions to 3,600 in 1975, a year ahead of schedule, but, since then, a further reduction was impossible.

In August a letter to the editor, written by Warner, was published by the Toronto Star. The letter stated that the only real data available on acid rain was "the ministry's speculation." Another point that Warner continued to make was the enormous cost of lowering acidic precipitation by reducing emissions. Warner also alluded to the Ontario Ministry of the Environment's claim that less than 10 per cent of the acidic precipitation falling in Ontario resulted from emissions within Ontario.

On October 22, 1979 a report from the American magazine,
Scientific American, was cited in the Ottawa Citizen. The article stated that,

...scientists believe the amount of pollution from the Inco Ltd. smelter in Sudbury, Ontario in the last 10 years equalled that emitted by all volcanoes in the history of the world.

A report on pollution dispersal in the current issue of Scientific American magazine also said that Inco--the largest single source of sulphur pollution in North America--accounts for about one per cent of the total annual emissions from all sources of sulphur throughout the world (Ottawa Citizen, October 22, 1979: 12).

The CP report was also carried in the Windsor Star. A similar article, written by Arthur Moses, was also found on the same day in the Globe and Mail. Although the Globe and Mail article repeated that Inco's giant smelter was the largest single source of sulphur dioxide emissions in North America, The Scientific American report was not mentioned.

In all three of the newspapers, Warner claimed that scientists had insufficient evidence to say Inco was the cause of damage from acid rain. And once again, Warner mentioned the economic impact of acid rain controls. He suggested that if governments insist on quick reductions of Inco's acid rain emissions, the company may need more public funds to convert more gas to sulphuric acid.

On Monday, November 5, 1979, the Globe and Mail and the Sudbury Star carried articles about the difficulty in finding solutions to Inco's pollution problems. Both articles reported on Warner's addressing a conference on acid rain held in Toronto on the earlier Saturday. The Sudbury paper reported
that Warner had said that "clean up is more a problem of technology than money." Warner was also directly quoted as saying "The question is not whether or when, but how." (Sudbury Star, November 5, 1979: 5).

The Globe and Mail used the same quote, but also reported that Mr. Warner disagreed with federal Environment Minister John Fraser, who told the conference that technology was available to remedy all acid rain problems. Warner was later quoted in an interview as saying "Fraser's statement was a general statement, he surely wasn't talking about everybody." (Globe and Mail, November 5, 1979: 34).

In the article, Warner briefly explained that the gases released by Inco were released in weak streams, and that an effective method of concentrating the gases was needed. Even if such a method was developed the company would have to find a market for the by-product, liquid sulphur dioxide. He continued that the company was not looking to get rich from pollution but was just looking for a cost effective solution to the problem. He reiterated claiming that cost effective did not mean a profitable but rather a least costly way to do it. His last quote in the article was when solutions were found "we won't wait for an order from the minister. We'll implement them as soon as possible." (Globe and Mail, November 5, 1979: 34).

Warner's construction of acid rain changed since it first appeared in the press in early 1979. He tried to change the
perception of Inco, from a company that would not implement pollution controls because of their high costs, to a company that would do whatever was necessary to reduce pollution, as soon as the technology became available.

Stuart Warner was an example of vested interests attempting to influence the construction of acid rain, which he presented to the press. His version of the issue was that of the limitations of incomplete science. However, he did not hesitate to use this so-called "incomplete data" to construct his own version of acid rain, whenever it was convenient to do so.

He argued that his company could not act until the causes of acid rain were proven beyond a doubt. Warner did not mention any of the negative effects of acid rain on the environment, rather he mentioned the negative effects that increased acid rain emission controls would have on his company and on the employment rate in the area. He also attempted to show that his company was a good corporate citizen by stating that they had met their emission control level, in accordance with a previous emission control order, a year early in 1975. By citing the high costs of control and the possibility of cutting back production at Sudbury, Warner made it clear that if his company was forced to bear any of the cost of cleaning up the problem, others, such as the Sudbury workers and the community, would also pay.
Douglas Costle.

Douglas Costle was the administrator of the American Environmental Protection Agency in 1979. His construction of acid rain was selected for a closer examination because of his prominence in an American agency that was responsible for environmental issues. Costle was also the most frequently mentioned governmental official, Canadian or American, used by the five newspapers for acid rain information in this study. He was the only government official to be mentioned at least once in all five of the newspapers examined by this thesis. In total he was mentioned six times, once in four of the newspapers and twice in the Windsor Star.

Mr. Costle was first mentioned in the Globe and Mail on August 9, 1979. in an article that reported on a meeting between U.S. officials and Canadian Environment Minister John Fraser in Washington. It was reported that the two countries agreed to bring their acid rain experts together to "go over everything about acid rain." It was also agreed that Mr. Costle and Mr. Fraser would meet again in October.

Although Mr. Costle was mentioned in the article, only two sentences were actually attributed to him. "Mr. Costle said that it wouldn't be a case of waiting for Canada to catch up on emission standards before the United States moved on it's own. "It's not a SALT (Strategic Arms Limitation Treaty) type of deal." Even in such a brief statement, Costle makes it clear that Canada lags behind the United States in acid rain
emission controls.

The next day, August 10, 1979, the Windsor Star carried a CP article in which Costle was only mentioned briefly. It was reported that John Fraser had met earlier this week with Douglas Costle, administrator of the U.S. Environmental Protection Agency, and Cecil Andrus, U.S. Interior Secretary, and said that both countries now agreed that acid rain was a continental problem.

The next article that used Douglas Costle as a source of information was the Windsor Star, on October 13, 1979. The article dealt with mostly Canadian and American differences over the severity of acid rain and what should be done about it. As in the previous articles, Costle was hardly quoted. The only sentence that was attributed to Costle was "Douglas Costle, U.S. environmental protection agency administrator, says it is a 'big step forward' for both countries simply to recognize the problem."

On October 16, 1979, the Toronto Star used Douglas Costle as a source for two paragraphs in an acid rain insight article. This was the most that he was used by any of the five newspapers. Ironically, while this article would give him the most coverage, it would also mis-identify him, his first name was given as Bob rather than Douglas. Costle was identified by the paper as being "the most aggressive minister of the environment the U.S. has ever had." Although the statement may be considered flattering, again Mr. Costle was mis-identified,
the United States did not have a minister of the environment.

Information which the article attributed to Costle was more pessimistic than had been in the previous articles. He was quoted as saying "We can't go out and tell an old coal-fired plant in Ohio, for example, to turn off its pollution. We're powerless on this issue. We are not ready to act." Costle was also reported as admitting "that the EPA and American Congress simply had no laws now which could cut air pollution from several hundred old coal-fired plants in the eastern U.S. Those plants were the worst and greatest source of the continent's acid rain." (Toronto Star, October 16, 1979: A10).

Two other articles that used Douglas Costle as a source of information appeared in the Ottawa Citizen and Sudbury Star on November 15, 1979. Both articles were from CP and were almost identical.

The articles carried a joint statement, released in Geneva, from Canadian Environment Minister John Fraser and Douglas Costle. The statement announced that Canadian and American officials would meet in Ottawa in December and try to come up with some sort of accelerated timetable for action to reduce the problem of acid rain. "Because the damage is in so many cases irreversible we are agreed that time is of the essence and have asked our officials and scientists to accelerate their efforts in response to the problem," the statement said. Both Fraser and Costle were in Geneva signing
an international agreement on air pollution.

Although both articles originated from the same press release and were almost identical, the Sudbury Star mistakenly referred to Mr. Costle as Crosbie. This was the last time in 1979 that Douglas Costle was used as a source of acid rain information. As was reported earlier, none of the five newspapers mentioned anything about the December meeting between Costle and Fraser.

Harold Harvey.

The source used most often from either the Canadian or American scientific communities was Harold Harvey, a professor from the University of Toronto. His named appeared in a total of seven articles dealing with acid rain, in the five newspapers examined for this thesis. The only newspaper of the five which did not print an article in which Mr. Harvey was used as a source was the Globe and Mail.

Harold Harvey was first used as a source of information on acid rain on February 9, 1979, in the Sudbury Star. In the article, he was addressing an Ontario legislature committee on acid rain. He said that the federal government was unlikely to try to halt acid rain which he says would probably kill all life in 48,000 Ontario lakes within 10 years. Harvey claimed that acid rain pollution could be eliminated with tough pollution controls on smoke stacks. But there was little hope that the federal government would try to force the United
States, a major source of acid rain, to co-operate in implementing any such controls.

It was also reported that Mr. Harvey told the legislature committee that Ontario deserved some praise for its investigation of the acid rain problem but that at the federal level there was virtually no research, political interest or action. Harvey was identified as being the last of almost 25 scientists and industrialists who testified at four days of hearings on acid rain.

On March 10, 1979, The Toronto Star printed a relatively long article (roughly a half a page) which carried only one sentence from an interview the reporter had done with Harold Harvey "several months ago." The sentence was used in a part of the article where the writer was criticizing the efforts of the Ontario government in gathering research about acid rain. "It's almost as if they didn't want to start facing the reality," was the only sentence taken from the interview.

On August 21, 1979, three newspapers: the Windsor Star, the Sudbury Star and the Ottawa Citizen, carried articles that mentioned Harold Harvey but did not use him as a source of information. The articles reported that Harvey was going to receive grant money from the Provincial lottery fund to study the effects of acid rain on fish in lakes southwest of Sudbury. The articles in the Windsor Star and the Ottawa Citizen were identified as coming from the CP wire service, the source of the article in the Sudbury Star was
unidentified.

The main angle in the CP release was the Provincial lottery corporation giving the Ministry of Natural Resources a $137,000 grant to continue research into acid rain in Northern Ontario lakes. The articles identified Harold Harvey of the University of Toronto as receiving $28,000 of the grant money.

The article in the Sudbury Star took a different angle. It simply mentioned that, "Effects of acid rain in lakes southwest of Sudbury will be the subject of a study paid for by a provincial lottery grant." The article identified Harold Harvey as a "leading acid rain researcher at the University of Toronto."

On November 1, 1979, the Toronto Star carried an article covering a forum on acid rain at the St. Lawrence Centre in Toronto, which had attracted about 150 people. The article reported that Harold Harvey of the University of Toronto's zoology department, told the forum: "When a fish goes belly up and dies it's our warning signal."

The reporter who wrote the article, Jackie Smith, continued to report about an interview with Harvey. In the interview, Harvey warned that 19 lakes were dead in the La Cloche mountain area of the north shore of Georgian Bay and there was no way to bring the lakes back to their normal conditions. In some of the lakes, the fish life was being depleted because the fish can't reproduce, or die before they
have a chance to spawn. Harvey continued that fish were not the only ones to suffer; salamanders, frogs and other wildlife were also affected by acid rain.

Harvey blamed the problem on industries that have built tall smokestacks and have turned a local problem into a regional one, adding that Canada and the United States need an air quality agreement and decisions on pollution abatement procedures.

Four days later, on November 5, 1979, the Ottawa Citizen printed an article written by a reporter covering the Action Seminar on Acid Rain in Toronto. It was reported that the seminar was attended by 800 people from all over North America. The only quote of Harold Harvey's that was used was an answer to the question of why can't someone start breeding acid-resistant fish.

You know about the canaries the miners used to take underground to warn them about gas. When the canaries died, it was time to get out. I look on our fish as our canaries. It makes no more sense to produce an acid-resistant fish than for miners to breed gas resistant canaries (Ottawa Citizen, November 5, 1979: 33).

The sudden newsworthiness of acid rain in 1979 might suggest that acid rain experts like Harvey, were not well known to reporters. Mazur (1981: 106) claims that the relationship between reporters and individual scientists has some influence in how often the scientists are selected for sources of information by the media. He points out that only a few scientists are important sources for stories. Most other scientists don't talk to reporters because they are simply not
asked. Reporters seek information from sources whom they know personally, or by the official status of the sources.

This may also explain the relative under-representation of scientific sources used by the press. There were just 28 sources of information from the entire scientific community used by the five Ontario newspapers. This low number more likely indicates a distant relationship between journalists and acid rain researchers than a shortage of researchers in the acid rain field.

Even when representatives from the scientific community were used as sources, the information obtained from them was limited. For example, despite their influence and knowledge, Douglas Costle as an administrator of the EPA, and Harold Harvey, a leading Canadian acid rain expert, were not used as major acid rain sources by the press.

In Harvey's case, he was mentioned by the press a total of seven times, he was only used as a source of information about acid rain four times. Mr. Harvey was just mentioned by name in three other articles that simply reported on him receiving grant money.

On three out of the four occasions that the press published acid rain information attributed to Mr. Harvey, he was addressing a major gathering of people. The Sudbury Star used him as a source on February 9, 1979, when he was addressing a legislative committee on acid rain. On November 1, 1979, the Toronto Star reported that he had spoken to about
150 people attending an acid rain forum, at the St. Lawrence Centre in Toronto. Four days later, the Ottawa Citizen ran an article that used information that Harvey had used to address over 800 people attending an action seminar on acid rain in Toronto.

On only one occasion did a reporter use Harvey as a source of information when he was not addressing a major acid rain gathering. This was on March 10, 1979, when a Toronto Star reporter claimed that he had obtained this information from an interview ten months earlier.

As mentioned earlier (p. 108), the proximity of a source's institution may also influence how often they are used as sources of information by the media. This may explain why Douglas Costle, who was based in Washington D.C., was not used as a source more often.

For example, four out of the six times that Douglas Costle's name appeared in the press was after meeting with Canadian Minister of the Environment, John Fraser. Another time that Costle's name was mentioned by the press was a day after a joint Canada-United States committee of scientists released its first report on acid rain. The article stated that ten days earlier the EPA had released its own assessment of acid rain (this assessment was not reported in any of the five newspapers). The reporter claimed that he had carried out interviews on both sides of the border, but it was not clear if Costle's remarks were the result of the interviews or the
result of the EPA's assessment. In one other article it could not be determined where Costle's comments originated from. There were no articles which stated that Mr. Costle's remarks were obtained from a specific interview with him.

Although Harvey and Costle would have made relevant and informative acid rain sources, they were not actively searched out by the press. It appears as if the press were more concerned with accessibility rather than relevance when it looked for sources to construct its acid rain reality.

The literature has shown that the sources used in a newspaper article influence what is printed and presented to the public as reality by the press. The sources selected by the press for their construction of reality are not chosen at random by the reporter, this selection is often very deliberate. This thesis supports research which suggests that the actual location of various sources of information will influence their selection or omission by the press. Sources of information are more likely to be selected by the press if they go to the reporters rather than wait for the reporters to come to them.

ENVIRONMENTAL ORGANIZATIONS.

The five newspapers selected for analysis by this thesis used only 18 sources representing environmental organizations in their construction of acid rain. There was no source used by all five newspapers. The majority of the sources were used
only once in any one paper.

The following sources will be examined; Gord Mewhiney, executive director of the Federation of Ontario Cottager's Association; Ron Reid, an environmentalist with the Federation of Ontario Naturalists; and Arlin Hacklin of the Algonquin Wildland League. Both Reid and Hacklin were used as sources by the press twice, while Mewhiney was used three times.

Gord Mewhiney, the executive director of the Ontario Cottager's Association was only used as a source by the Toronto Star. He was first mentioned in the newspaper on February 8, 1979. It was reported that Mewhiney was speaking on the third day of hearings being held by the Legislature's Resources Development Committee into the acid rain falling on Ontario.

He told the committee that more than one million cottagers "want to know what is happening and what will be done, now, about acid rain and dying lakes." Mewhiney complained "Our lifestyle and our cottage areas are threatened and if we quit using our cottages, the cottage and tourist industry won't exist in three decades" (Toronto Star, February 8, 1979: A4).

On February 11, 1979, the Toronto Star printed another article, using Mewhiney as a source of information. In the article, Mewhiney said that he wanted to make sure that the federal cabinet hears from his group on February 21, 1979, when the cabinet meets in Toronto.
In the article, Mewhiney claimed that it was time that the federal government became involved in solving the acid rain problem which is harming Ontario. He went on to place much of the blame for the problem with the United States, "We have no intention of letting up the pressure on the Ontario government, but one province can't negotiate with the U.S. federal government. Ottawa has to do that, and must do it quickly." (Toronto Star, February 11, 1979: A2).

On March 10, 1979, another article was published in which some of Gord Mewhiney's quotes were used. The article reported that the remarks were presented to a Queens Park Committee last month. "We've been told about water pollution; we've been told don't eat the fish because of mercury poisoning, and now we are told that our lakes don't have a hope in hell. Our property values, our lifestyle, an entire economy is being eroded. Put a plug on the acid rain." (Toronto Star, March 10, 1979: C4).

Arlin Hacklin of the Algonquin Wildland League was used twice as a source, once by the Toronto Star and once by the Sudbury Star on April 24, 1979 and April 26, 1979 respectively. Both of the articles reported on plans by Ontario Hydro to build a coal-powered generating plant at Atikokan, Ontario.

The quotes attributed to Hacklin were similar in both articles. He says that building the power plant will create jobs, but the plant's pollution will hurt other industries.
Hacklin goes on to warn that any increase in acid rain pollution from the proposed plant will damage lakes and forests and hurt the tourism, recreation and forest industries in the area.

Ron Reid was identified as an environmentalist with the Federation of Ontario Naturalists by the *Sudbury Star*, which used Reid as an acid rain source on November 3, 1979 and November 5, 1979. The first article, from CP, reported on the events at a three day conference on acid rain in Toronto. In the article, Reid claimed that the lack of a United States-Canada treaty was no excuse for the Canadian and Ontario governments to remain inactive about the problem. "In the last six months, acid rain has come home to us as being the greatest environmental problem we've ever faced" (*Sudbury Star*, November 5, 1979: 7). He went on to say that while the people in Ontario have first-hand knowledge about the dangers, other Canadians and many U.S. citizens are not aware of its scope. The second article simply reprinted one of Reid's quotes, about acid rain being the greatest problem we have ever faced, from the earlier article.

All three sources only had a brief opportunity to construct acid rain in the press. All three sources tried to construct acid rain as a major problem. But the extent of the problem varied, from being considered a threat to a certain lifestyle and property values to the greatest environmental threat the country has ever faced.
Representatives from community-based, grassroots, anti-acid rain movements are conspicuous by their absence from the list of sources used by the press, who tended to favour more "legitimate" sources of information. As far as the press was concerned grassroots, anti-acid rain organizations simply did not exist.

Cable and Benson (1993: 464) claim that community-based grass roots environmental organizations began emerging in the 1980s. Unlike the larger, well known lobbying organizations such as the Sierra Club, these grass-roots organizations tend to focus specifically on local environmental problems and were less concerned with national environmental policy. The are formed in opposition to the problem of pollution caused by local businesses. The groups emerge when traditional state-based regulatory mechanisms fail to control what are perceived as the illegal and harmful acts of local polluters.

According to Cable and Benson (1993: 466), local communities are less concerned with national and global environmental quality. They are more concerned with their own local environmental quality, such as air and water pollution, which infringe on their everyday lives. When corporate production processes result in serious pollution over an extended period of time, a sense of injustice is frequently provoked among local citizens, who perceive that formal regulatory and control process are not working. From the resident's perspective, local polluters are committing
criminal acts with impunity.

Four phases of the formation of a grass-roots organization have been suggested by Cable and Benson (1993: 472). The four phases include: 1) the perception that a corporate crime has occurred. In this phase, residents come to see and define themselves as victims of a corporate environmental crime; 2) Individual appeals to regulatory processes. In this phase citizens make individual appeals to the state through the regulatory process; 3) The perception of environmental injustice. Citizens become disillusioned with the state and its seemingly inadequate, often incompetent responses and believe that the regulatory system has failed them. A growing sense of environmental injustice leads to pressure on the state for more adequate action. In some cases, individual citizens independently pressure the regulatory process, through telephone calls, letters and law suits. But more and more frequently, citizens seek environmental justice through a collective effort; 4) The final phase involves the outcome of increased democratic pressure. This phase involves the outcome of the legitimacy crisis generated by democratic pressures. If the grass-roots environmental organization is successful in applying democratic pressure on the state, the state resolves the legitimacy crisis by enforcing environmental standards. If the group fails in bringing enough pressure to bear on the state, the corporation's infractions continue and environmental problems persist.
None of the four phases occurs instantly, each one requires a certain amount of time to be implemented, acted on and completed. Cable and Benson (1993: 471) use the example of Turkey Creek in southwestern Kentucky. The creek had become polluted in the 1890s, by waste from the Middlesboro Tanning Company. For decades, individuals complained to corporate and city officials through letters, telephone calls and occasional petitions, only to have their efforts fail.

In 1972, after environmental laws and a federal regulatory process promising protection from environmental hazards were established, residents came to perceive the pollution of Yellow Creek as a corporate crime. However, even after environmental laws were established, letters and calls to various officials, by Yellow Creek residents, proved of no use. It was not until 1980 that the valley residents established "Yellow Creek Concerned Citizens" and began a collective effort to clean up the creek. Three years later, in 1983 the group filed suit against the EPA for failure to enforce its own standards. The suit was finally settled another three years later in 1986, with the signing of a consent decree negotiated by the EPA, the city, the tannery, and the grass-roots group.

It is possible that some phases of grass-roots organization began in Sudbury, or some other part of Ontario prior to or throughout 1979. However such groups did not receive any recognition from any of the five Ontario
newspapers between January 1, 1979 and December 31, 1979.

EFFECTS OF LOCATION ON THE CONSTRUCTION OF ACID RAIN.

Outside political and economic forces can influence the perception of events in individual communities throughout Ontario. For example, acid rain means different things to the residents of Sudbury than it does to the citizens of Toronto.

Inco is a major source of acid rain pollutants, but it is also a major employer in Sudbury, a northern community with a limited industrial base. The people of Sudbury rely on the jobs and spin off effects of Inco.

Toronto is a larger city with a much broader industrial base. Although Toronto has its share of major employers it is certainly not a "one industry town." It should also be noted that none of Toronto's industries have been singled out by the press as being acid rain producers. For example, the newspapers pointed out that the exhaust from automobiles was a source of acid rain pollutants, however it was never mentioned that due to the great number of cars in the Toronto area, that Toronto would also be considered a major acid rain producer.

A comparison has been made between articles dealing with acid rain in the Toronto Star and the Sudbury Star. Issues dealing with acid rain which are unique to any one of the two areas will be listed. The newspapers will be compared throughout 1979, with the exception of a four month period
between June 27 and November 3 because of a work stoppage at the newspaper. During this period of time, articles which were printed by the Toronto Star will not be examined because we would be unable to compare the perspectives from the Sudbury area.

COTTAGE COUNTRY.

Over all, there were only a few differences in acid rain reporting between the Toronto Star and the Sudbury Star. The only major angle presented by the Toronto paper, that was not covered by the Sudbury daily, was the effect of acid rain on cottage country, including the Muskoka and Haliburton regions. The Toronto Star carried a number of articles reporting that Ontario Cottagers were concerned about the effects of acid rain on their way of life and property values of their cottages. The cottager's complaints were never mentioned in the Sudbury Star.

But Ontario, which has only recently discovered that the acid rain has damaged the most popular resort and recreation areas of Muskoka and Haliburton, has no major plan to the lakes, ministry officials testified. (Toronto Star, February 6, 1979: A2).

Two days later another article repeated the perspective of cottagers.

More than 1 million Ontario cottagers "want to know what is happening and what will be done, now, about acid rain and dying lakes." the Ontario government was told yesterday (Toronto Star, February 8, 1979: A4).

Three days later, the Ontario cottagers were ready to take their complaints to the federal Government.
Representatives of 1 million Ontario cottagers suffering the effects of acid rain plan to tackle Ottawa for its weak efforts at ending the problem (Toronto Star, February 11, 1979: A2).

Less than a month later another article was published that warned of the negative effects that acid rain would have on some Ontario cottagers.

At least 48,000 more lakes, including the popular Muskoka-Haliburton cottage country, are immediately threatened. Half of those will die within the decade. (Toronto Star, March 10, 1979: C4).

After appearing in the newspaper four times in two months, the perspective on acid rain according to the cottagers would not appear again until mid-December.

You don't have to own a cottage in Muskoka to share the loss in Ontario's wealth brought about by the crippling of our recreation and tourist industries (Toronto Star, December 16, 1979: A8).

A possible explanation for the Toronto Star reporting on the concerns of cottagers may be because there are more cottagers in the Toronto area than in Sudbury. Articles dealing with the concerns of cottagers may be considered more interesting in the GTA than in the Sudbury area. It is interesting given Bagdikian's (1978: 63) statement that metropolitan newspapers are only interested in selling their newspapers to the affluent, and are using marketing techniques to design their content and control their circulation primarily for the benefit of big spenders, to consider whether the Toronto Star's coverage might have to do with attracting an affluent audience.
INCO DOES NOT CAUSE ACID RAIN.

The Sudbury Star presented a slightly different version of acid rain than the Toronto Star. During February, the first month that acid rain was considered newsworthy by the press, Sudbury Star articles reported that Sudbury's acid rain came from a source from outside of the area. The articles implied that Inco was not responsible for acid rain in the Sudbury region. However, effects of Inco's emissions on other areas outside were not mentioned. The Toronto Star had identified Inco as an acid rain polluter but did not specifically report where Inco's pollution was going, or what areas were being affected.

The following excerpts, from three Sudbury Star articles, appear to claim that Inco's emissions are not responsible for the acid rain which is found in the area.

In a Sudbury area study with local sulphur-dioxide sources temporarily shut down, acid rain levels remained, indicating the dominant source lies outside the area, the paper said (Sudbury Star, February 6, 1979: 2).

Sudbury's smelter stacks not so long ago were getting some of the blame, but it seems to be recognized now that by far the greatest threat is polluted air drifting north. Inco and Falconbridge chimneys obviously affect some lakes somewhere, but their elimination, in Mr. Parrott's opinion, "would have virtually no impact on the continuing damage" (Sudbury Star, February 17, 1979: 3).

.... recent ministry tests have shown that the nine month shut-down of Inco Metals Co. in Sudbury, a large source of sulphur emissions, had little effect on the level of acid rain (Sudbury Star, June 20, 1979: 40).
INCO MAY CAUSE ACID RAIN.

The Toronto Star reported that Inco was a major producer of sulphur dioxide in their first article on acid rain in early February. The Toronto newspaper also pointed out that although Inco may not be responsible for acid rain in Ontario, it may have been responsible for acid rain damage at some other unknown locations.

By June, 1979, Sudbury Star joined the Toronto Star in admitting that Inco was a major producer of acid rain. However, the Sudbury newspaper still claimed that the company was not likely responsible for the acid rain problems in the Sudbury region. The Sudbury Star continued to blame emissions from the United States for the area's acid rain problems.

Officials said yesterday that the giant Inco Ltd. nickel smelters at Sudbury, which are allowed to dump 1.4 million tons of sulphur dioxide per year into the air, make up less than 20 per cent of the total pollution causing acid rain.

Almost all of the acid rain comes from the heavily industrialized central U.S. said Sam Stevens, a ministry air resources official. Tests conducted recently, while the Inco operations were shut down, showed no measurable decline in acid rain pollution over Ontario (Toronto Star, February 6, 1979: A2).

Ontario produces some of the pollution--about 2 million tons per year, largely from the Inco smelters in Sudbury--but the American outpouring is seven times greater and is destroying Ontario's heartland (Toronto Star, March 10, 1979: C4).

The Sudbury Star began to report that Inco may be responsible for contributing to acid rain three months later, in early June.
More than half the acid rain damaging Ontario is carried from United States plants by air currents, although Inco Ltd.'s smelter in Sudbury is the world's largest single source of pollution, said government testimony (Sudbury Star, June 9, 1979: 2).

The *Toronto Star* carried articles suggesting that Inco may contribute to Ontario's acid rain problems in June and July. This suggestion was not made again until mid-October.

Nearly 20 per cent of all sulphur dioxide air pollution produced by Canada comes from a single source, Inco Ltd.'s giant Sudbury smelters, the report says.

Ontario recently reversed a control order against Inco and permitted the plant to continue its present pollution emissions because, the province said, Inco didn't cause any significant part of the over-all acid rain fall in Ontario (Toronto Star, October 16, 1979: A2).

**INCO CAUSES ACID RAIN.**

In July, 1979, the tone of the *Toronto Star* articles began to change. Now Inco was being blamed for its production of sulphur dioxide. There was no more claiming that although Inco was a producer of acid rain, the United States was still mostly responsible for the province's acid rain problems.

The committee also noted that the Inco operation at Sudbury was the largest point source of sulphur dioxide in North America. Since sulphur dioxide emissions are one on of the main causes of acid rain, the committee demanded that the province impose a new control order on Inco reinstating the original target of 750 tons per day, which was in the 1970 order but dropped last year because of a permissible level of 3,600 tons per day (Toronto Star, July 27, 1979: A9).

The Sudbury Star's articles did not reflect this change until early November.

Inco Ltd. will be "very pleased" to participate in discussions with the federal environment ministry on the acid rain problem, Harry Tompkins, the company's
manager of media relations said today.

A recent article in the Scientific American journal pointed the finger at Inco as one of the most prolific acid rain contributors (Sudbury Star, November 6, 1979: 1).

The timing of the reports was not the only difference between the coverage of the two newspapers. When the Sudbury Star eventually reported that Inco was a major producer of acid rain, the newspaper ensured that Inco was not the only "acid rain villain" in the province and listed other acid rain producers.

Then, three articles appeared in the Sudbury Star in two days in mid-November.

Inco Ltd. of Sudbury has been named by both U.S. and Canadian authorities as a major contributor to the acid rain problem, and along with Falconbridge, Noranda, Hudson Bay Mining and Ontario Hydro, has been summoned to Ottawa to discuss the problem (Sudbury Star, November 15, 1979: 1).

A second article, dealing with the same theme, appeared in the same edition.

Number one position on any environmentalist's hit list is held by multi-national base metal producer Inco Ltd. And maybe for good reason. Inco smelting facilities contribute about three per cent of gas oxides in North America that go towards producing acid rain.

Ontario has six major sulphur dioxide polluters, three of them government owned—Ontario Hydro coal generating plants near Sarnia, Toronto, and Nanticoke.

Add what they emit to what Falconbridge's Sudbury smelter and Algoma Steel's Wawa operation produce and you get a hefty 1,788 tons a day being pumped into the atmosphere (Sudbury Star, November 15, 1979: 4).

The next day Inco was again singled out by the Sudbury
newspaper as being an acid rain polluter. The article dealt solely with pollution from Inco and did not mention the acid rain contributions from the United States.

Opposition parties joined forces Thursday urging the Ontario government to lead the fight in reducing acid rain by clamping down on Inco Ltd.‘s Sudbury smelter (Sudbury Star, November 16, 1979: 1)

Less than a month later, Inco was still being singled out by the Sudbury Star.

Inco, as nearly everyone in the Sudbury district knows by now, has won a measure of unwanted fame as the largest single source of sulphur dioxide emissions into the atmosphere in North America, although only a small part of the total. Cleaning up the source, as represented by thousands of industrial plants on both sides of the international border, is a monumental task (Sudbury Star, December 14, 1979: 4).

ACID RAIN: NOT THAT SERIOUS.

Compared to the Toronto newspaper, the Sudbury Star did not portray acid rain as being such a serious problem. The Sudbury newspaper reported on occasion, some of the benefits associated with acid rain. A common theme in a number of articles, editorials and letters to the editor was the fertilizing benefits of acidic precipitation. All of the Sudbury Star’s letters to the editor concerning acid rain, questioned the research into the effects of acid rain, claiming that acid rain was not as serious as some had made it out to be.

By portraying a "positive" side to acid rain and questioning the research into its negative effects, the Sudbury Star had avoided framing the issue as serious.
Instead, the paper attempted to frame Sudbury and Inco as the victims of a bad reputation based on faulty research.

If Inco's sulphur dioxide emissions were at a perfect level, Canada would not have much with which to bargain on an international emission control treaty (Sudbury Star, February 16, 1979: 2).

Five days later, the Sudbury paper published a letter to the editor that claimed that acid rain was really not a problem in the area because nature had ways of overcoming its shortcomings.

Today we have politicians predicting that the fish in our lakes will be dead within four to 10 years due to acidic rain. I would like to suggest to the predictors of doom that nature has ways of rectifying its shortcomings. During years of copious rainfalls in the area, the fresh water that falls directly into the lakes will reduce the acidity in the water, not add to it. I think that it would be safe to predict that the fish in our area will be alive and well for years to come, and they will still be capable, when they strike at a lure, of pulling the fishermen right out of their boats (Sudbury Star, February 21, 1979: 7).

After February, there was a substantial lull in articles questioning the seriousness of acid rain. After February, the next article did not appear until mid-November. It was a letter to the editor which again appeared in the Sudbury Star.

In the past few days I have reached the conclusion that acid rain, in itself, at pH 4.2, is not normally toxic to humans, animal and marine life, including fish, in addition to previous knowledge that it acts as a nutrient to vegetation, which absorbs and buffers it (Sudbury Star, November 20, 1979: 4).

Three days later an editorial in the Sudbury Star questioned the continuing research into acid rain and again mentioned a possible benefit.

I wish the facts were studied more carefully, and more
practical common sense used, before publishing or broadcasting irrational conclusions. Bureaucrats, international or otherwise, do not want to do anything practical. They only want more academic study to allow them more committee discussions and to deter practical decisions. The conclusions in the report are all negative. They mention that acid rain acts as a nutrient but do not discuss this or vegetation buffering which are very important factors (Sudbury Star, November 23, 1979: 4).

Articles questioning the seriousness of acid rain would continue to appear in the Sudbury newspaper throughout the month of November and continue through December.

Although acid rain poses a serious threat to Ontario's lakes and forests, a report done by the University of Guelph says it actually helps crops in southern Ontario (Sudbury Star, December 11, 1979: 3).

THE COST OF SOLUTIONS.

Reasons for Inco not reducing its emissions were found in the Sudbury Star but not reported on in the Toronto Star. Reasons offered for Inco not reducing emissions included Inco vice president Stuart Warner's claim that the problem of emission reductions was a lack of technology and that cost was not a factor (as noted earlier, page 118). Ontario's minister of the environment, Harry Parrott claimed that the technology for reducing emissions existed but difficulty in disposing of the by-product, sulphuric acid, made such reductions impractical.

High costs are not the only thing standing in the way of cleaning up emissions that cause acid rain, says Ontario Environment Minister Harry Parrott.

"There is a complicated problem of what to do with that material once it is removed from the atmosphere," Parrott said Tuesday in the legislature in answer to
opposition demands for action against Inco Ltd.'s smelting operations in Sudbury (Sudbury Star, November 7, 1979: 3).

Any technological breakthroughs that may have reduced emissions at the Inco smelter were only mentioned in the Sudbury Star.

Inco Metals Co. could reduce sulphur dioxide emissions at the Copper Cliff smelter significantly within two years if it perfects a recent scientific breakthrough in milling technology (Sudbury Star, November 19, 1979: 1).

Another significant angle found in Sudbury Star acid rain articles was environment versus the economy. The economic implications of acid rain controls were not discussed in the Toronto Star. Reduced emissions forced on Inco would result in a number of job loses. As previously noted (p.124), the potential effects of Inco being forced to reduce emissions were listed by Stuart Warner.

Both countries must face the issue of job versus the environment if solutions to the acid rain phenomenon are to be found (Sudbury Star, November 3, 1979: 7).

The analysis of newspaper articles in this section has shown that the newspapers from these two areas have taken different perspectives in their acid rain constructions.

Despite the fact that Sudbury is suffering more from the negative effects of acid rain than Toronto, the local newspaper appears to be defending the country's largest producer of acid rain pollutants. Acid rain articles in the Sudbury Star did not condemn Inco for being a major acid rain polluter. Some of the articles appeared to indirectly support Inco by minimizing the affects of acid rain or even claiming
that the environmental problem actually had a beneficial side.

Perhaps the attitude taken towards Inco and acid rain could be explained by Gould, who claims that the local economic structure is influential in determining the level and nature of local environmental consciousness (1993: 159). He also states that much of the local resistance to environmental remediation stems from the dependant economy of the town, regardless of the visibility of local environmental problems (1993: 163).

There is no question that Inco is a major part of the economic structure of the Sudbury region. Henry Radecki writes,

In 1979, Inco's work force in the Sudbury basin was 11,180 hourly-paid employees and 2,845 salaried staff. The earnings in wages and salaries derived from Inco (gross earnings for 1978--$214 million), have been the mainstay of the area's economy for some decades and remain significant to the present time (1979: 5)

The attitude of a community towards their largest employer was also studied by Sharma et al. (1975: 455), who found that in their study of a small polluted town in northern Illinois, that 80 per cent of their respondents correctly identified the town's major employer as a major contributor to pollution in the town. However, 58 per cent of the respondents would choose to allow the current levels of pollution.

The newspaper's environment versus economy perspective offered in many of its acid rain articles, makes it clear that any action against Inco will have an effect on Sudbury. While this perspective may appear to be representing only the self
interests of the region, it is an important issue in any environmental affair.

It is also possible that the newspaper's presentation of acid rain was the result of not wanting to portray a more negative image of Sudbury to its readers. The influence of Inco on Sudbury's image was explained by Radecki,

Sudbury's image as the "Nickel Capital of the World is that of a company town--more specifically, that of an INCO dominated community,...one characterized by endemic labour-management disputes and strife (1979: 3)."
VI: CONCLUSION.

Research for this thesis has determined that there were a number of social constructions of acid rain presented by the press. Although acid rain had been around since the 1890s, there had been no widespread knowledge among the general public in Ontario until February 6, 1979, the date that acid rain was first considered newsworthy by the press. After the first article appeared in the newspapers, acid rain continued to remain newsworthy throughout 1979.

A combination of factors explain why February 6, 1979 was such a significant date in the history of acid rain for Ontario. These factors included the press having what they considered a legitimate source of information in Ontario Environment Minister Harry Parrott, who was easily accessible via press conferences. The potential implications and the negative effects of acid rain on the province of Ontario would almost certainly attract attention from the readership.

As the year went on, the press continued to construct acid rain using familiar symbolism and imagery such as nature, forests and lakes being threatened by the pollution of various industries. However, only certain aspects of acid rain were used by the press while others were virtually ignored. For example, the framing of acid rain by the press appeared to completely exclude individuals. It was framed as being caused by industry (American industries and Inco) and only solutions pertaining to industry or international agreements were
mentioned by the press. Actions that could be taken by an
individual, such as reduced auto use, that might help to
lessen acid rain emissions were never mentioned.

The specific effects of acid rain on individuals were
also virtually ignored. Acid rain was often framed as
affecting vague objects such as Ontario or lakes and forests
but the effects on individual people were never mentioned. It
appears as if individuals were powerless to do anything in the
fight against acid rain and were completely left out of the
newspaper's acid rain equation.

Eventually other related issues were included in the
construction, such as the energy policies of the United
States, a perceived oil shortage, and emissions at the Inco
smelters in Sudbury. There were also themes from the early
constructions which continued to re-appear in subsequent
articles.

Overall, the acid rain constructions presented by the
newspapers were simple and superficial. For example, one of
the most common solutions to the problem was to shut Inco
down. However, there was no analysis to determine what the
effects might have been on the Sudbury region. Another
frequently mentioned solution was to reach an international
treaty with the United States. But again the press came up
short by not mentioning any of the details of a proposed
agreement.

The assessment of the risks associated with acid rain
presented by the press appeared to be volatile. In early February, Ontario Environment Minister Harry Parrott claimed that acid rain was one of the greatest environmental hazards to face humanity. By the end of November Parrott claimed that there was no need for immediate action since it was expected that it would take between 15 to 20 years for acid rain to kill one third of all the lakes in Ontario, there was plenty of time to find a solution.

Some acid rain constructions were presented more often than others. This was explained by the uneven representation of sources of information used by the press. As previous researchers suggested, the most frequently used sources of information were "official" government sources. However, as this thesis has determined, using Harry Parrott's changing and conflicting acid rain constructions, a source considered "legitimate" by the press may not be that reliable. It seems ironic that an environment minister may be a poor source of environmental information because of the political pressures that may be placed on them for taking various perspectives that may embarrass their party.

One unexpected finding was that business sources were hardly used by the press. However, it is likely that the business perspective was still presented to the public through some of the government sources. For example, Ontario Premier Bill Davis' acid rain construction was similar to the construction presented by Inco vice president of occupational
health and the environment, Stuart Warner. Both sources claimed that there should be no action taken to control emissions because not enough was known about acid rain. Warner and Davis also suggested that the provincial government should not act against the provinces' acid rain producing industries if it would put them at a competitive disadvantage.

Some sources of information, such as environmental organizations, were underrepresented and virtually ignored. Such organizations may have been knowledgeable about acid rain issues and been able to provide valuable and insightful information, but were not validated as legitimate sources of information by the press.

This exclusion of environmental organizations may have had a profound effect on the constructions of acid rain that had been presented to the public by the press. The selection of sources by the press was the most influential factor in constructing acid rain and was an underlying theme throughout this thesis. It is possible that the dogmatic rituals of the information gathering process among journalists has more of an influence on what is and is not published than the quest for balanced reporting.

One might question if the mainstream media is the most efficient way for environmental organizations to raise awareness for their various causes. Even if environmental organizations could overcome the media's tendency to ignore them, they would still be at the mercy of the journalists and
editors to present the information in the context that the environmental organizations had wished for.

Sixteen years later in 1995, acid rain is no longer considered newsworthy by the press. Articles about the subject no longer appear with the frequency that they once did in 1979. However, this is not necessarily a negative finding. A recent article in the *Toronto Star* reported that fish were returning to a lake system (Killarney Provincial Park area) killed by acid rain two decades ago.

The article suggested that the reason for the unprecedented recovery,

...was a 90 percent reduction in harmful sulphur emissions from Sudbury mining giants Inco and Falconbridge over the last ten years (*Toronto Star*, July 29, 1979: B6).

The article also reported that a commitment made by Canada and some European countries to further curb harmful emissions by the year 2000 was encouraging.

This finding supports the notion that news is the result of a number of selection processes by the press. The example illustrates that although a number of efforts were taking place to reduce acid rain emissions, the public remained uninformed because the subject was not considered newsworthy by the press.

The outlook for environmental reporting in 1995 is more promising than it was in 1979. Today the *Toronto Star* carries regular environmental page in the Saturday newspaper. There is also a regular environmental column written by
environmentalist Dr. David Suzuki, who has become a legitimate source of information for the press.

Although environmental reporting may have improved over the years, there is still much room for improvement. Environmental issues such as global warming and the thinning ozone affect all of humanity and deserve regular and prominent coverage in the daily press.

Future research could include a comparative analysis of the print media's social construction of other environmental hazards, such as the pollution of the Great Lakes or ozone depletion, in order to determine similarities in the selection of information sources by the press. Perhaps such a study would be able to indicate the true "progress" made by the press in environmental reporting.
BIBLIOGRAPHY.


Dennis, Everette E.

Douglas, Mary

Douglas, Mary

Douglas, Mary and Aaron B. Wildavsky.

Einsiedel, E.

Entman, Robert

Ericson, Richard, Pat Baranek and Janet Chan
1987 Visualizing Deviance. Toronto: University of Toronto Press.

Forster, Bruce A.

Friedman, Sharon M.

Fulford, Robert

Funkhouser G. Ray.

Gamson, William A.
Gamson, William A. and Andre Modigliani
1989 "Media discourse and public opinion on nuclear
power: A constructionist approach." American

Gamson, William A. and David Stuart
1992 "Media discourse as a symbolic contest: The bomb in

Gamson, William A., David Croteau, William Hoynes, and
Theodore Sasson
1992 "Media images and the social construction of

Gans, Herbert J.

Gerbner, George
1972 "Communication and social environment."

Gould, Kenneth A.
1993. "Pollution and perception: Social visibility and
local environmental mobilization." Qualitative
Sociology 16(2):157-178.

Gurevitch, Michael and Jay G. Blumler
1977 "Linkages between the mass media and politics: A
model for the analysis of political communications
systems." Pp. 270-290. in James Currin, Michael
Gurevitch and Janet Wollcott (eds.) Mass

Hall, Stuart
Beverly Hills: Sage.

Hall, Stuart

Halloran, James D
1970 Demonstrations and Communications: A

Hansen, Anders
1990 "Socio-political values underlying media
coverage of the environment." Media Development 37:
3-6.

Hansen, Anders
1991 "The Media and the social construction of the
environment." Media, Culture and Society 13 (4):443-
58.

Hansen, Anders and Olga Linne
1991 "Journalistic practices and television coverage of
the environment: An international comparison." Pp.
369-384 in Cees J. Hamelink and Olga Linne (eds),
Mass Communication Research: On Problems and
Policies.
Herman, Edward S. and Noam Chomsky

Hilgartner, Stephan and Charles L. Bosk

Howard, Ross and Michael Perley

Kaufman, Ira

Kerlinger, Frederick N.

Kladman, Stephan

Kotler, Philip

Krimsky, Sheldon and Alonzo Plough

Lacey Colin and David Longmann

Lang, Kurt and Gladys E. Lang

Langer, Suzanne

Lester, Marilyn

Lowe, Philip and Jane Goyder

Lowe, Philip and David Morrison

Lowe, Philip and Wolfgang Rudig
MacMillan, Susan L.  

Mazur, Allan  

McCormick, James  

McQuail, Dennis  

Miliband, Ralph  

Millar, Jack  

Molotch, Harvey and Marilyn Lester  

Murdock, Graham  

Nimmo, Dan and James E. Combs  

O'Meara, Daniel J.  

Park, Chris C.  

Parlour, James W. and S. Schatzow  
Porter, John
1965 The Vertical Mosaic. Toronto, Ont.: University of Toronto Press.
Protese, David L., Fay L. Cook, Thomas R. Curtin, Margaret T. Gordon, Donna R. Leff, Maxwell E. McCombs and Peter Miller
Radecki, Henry
Schoenfeld, A. Clay, Robert F. Meier and Robert J. Griffin
Schoenfeld, A. Clay
1973 Interpreting Environmental Issues. Madison, Wis: DERS.
Sederberg, Peter C.
Sharma, Navin C., Joseph E. Kivlin and Frederick C. Fliegel
1975 "Environmental pollution: Is there enough public concern to lead to action?" Environment and Behaviour 7(4):455-71.
Short, James F.
Sigal, Leon V.
Spencer, J. William and Elizabeth Triche
Spiegel, John P.
Stallings, Robert A.
Steinem, Gloria
Stroh, Glenn G., Robert P. Hawkins and A. Clay Schoenfeld
Swidler, Ann
Tichenor, Philip J., Gerald A. Donohue, Clarence N. Olien and James K. Bowers  

Tuchman, Gaye  

Tuchman, Gaye  

Weiss, Walter  

Weller, Phil  
1980 Acid Rain The Silent Crisis. Kitchener: Between the Lines.

Westergaard, John  

Wilkins, Lee  

Winter, James P.  
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