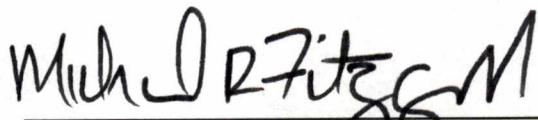


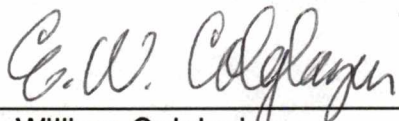
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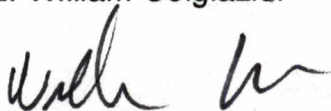


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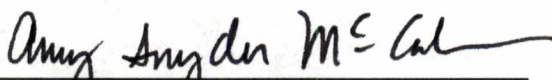
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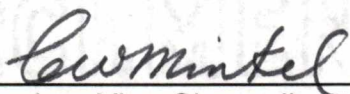


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**MASS IMAGES OF ENVIRONMENTAL PROBLEMS: NETWORK NEWS
COVERAGE OF WASTE ISSUES, 1975-1990**

A Dissertation

Presented for the

Doctor of Philosophy

Degree

The University of Tennessee, Knoxville

Alan Hunter Bacot

May 1992

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ABSTRACT

As the network news is the primary source of information about issues and events for most citizens, it acts to actively engage citizens in public discourse about public policy issues with government officials; also, by providing citizens with information, the network news functions to promote a central tenet of democratic governance: keeping the public informed. Subsequently, the network news is afforded tremendous influence in the interpretation of information that citizens receive, which allows it extraordinary opportunity to provide citizens explanations and definitions of issues and events as they transpire. The network news provides citizens with information that cultivates mass images of issues and events and influences citizens' judgments and subsequently affects how they perceive their world. This capacity of the network news to influence citizens is especially crucial for environmental problems as most citizens are unlikely to possess prior knowledge or experience with such problems, lending considerable import to the networks news' role in disseminating information to the public.

To ascertain the ability of the network news to affect citizens' opinions and influence their formation of mass images about environmental waste problems, a content and visual analysis of the three major network evening

news programs (ABC, CBS, NBC) is conducted for sixteen years, commencing with 1975. A model depicting the communication of information from reality to image is theorized and tested using data gathered from the content and visual analysis. Various characteristics of news coverage are analyzed to discern how the coverage provided second generation environmental problems over time conform to the proposed theoretical framework.

An examination of the findings from the analysis of content reveals that an increased volume, complexity, and prominence of coverage occurs over time, yielding definite patterns and trends in coverage characteristics of environmental waste issues. The visual analysis demonstrates that distinct images of environmental waste problems are offered by each network through dramatic content, message, and the changes in the uses of appearances, sources, and references during news portrayals. Consequently, a definite image of second generation environmental waste problems emerges over time: environmental waste is portrayed as an ominous, mysterious problem of prevalent proportions that poses a potential menace to all citizens and must, in addition to government action, be managed with assistance from other sources, perhaps science and technology or industry.

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CHAPTER 1

THE NETWORK EVENING NEWS, PUBLIC INFORMATION, AND THE PUBLIC POLICY PROCESS

INTRODUCTION

Since the inception of the American republic the press has occupied a prominent role in American society by acting as the eyes and ears of the people. Modern democratic society increasingly compels citizens to understand and engage in public discourse about important problems and policy choices that confront them. Citizens constantly use mass media to acquire information about the problems and issues they face.

The principal flow of information to the American public is channelled through the mass media -- television, radio, and the popular press. This fosters a contemporary society increasingly dependent on mass media for explaining and defining problems and issues. Media's relevance to the contemporary democratic polity has increased as they shoulder a greater responsibility for communicating information to citizens. Moreover, "[s]ince TV cannot begin to provide the variety of stories or the in-depth coverage that newspapers do, this has serious implications for a democracy that needs a well-informed citizenry to function properly" (Wilson 1989, 216). Mass media's importance is in

communicating information to the mass public, giving media the capacity to educate the public by significantly influencing what they see and hear about public affairs.

Most Americans obtain information about events, issues, and crises from the network evening news, the most popular and trusted news source in the nation (Graber 1989b, chap. 1). The evening news provides citizens with information to assist them in understanding problems and policy choices. Network news identifies and assigns meaning to problems and issues. It tends to shape the material it presents, creating mass images that influence people's judgements and affect how they interpret their world (Entman 1989a, chap 4; Iyengar and Kinder 1987, chap. 1; Nimmo and Combs 1990; Iyengar, Peters, Kinder 1982). Until the Cable News Network (CNN) took root in the late 1980s, the three major television networks, ABC, CBS, and NBC, produced the primary evening news programs constituting the news sources for most citizens.

The impetus for this study lies in understanding the images communicated to the public by the network news. This research seeks to evaluate the mass images portrayed by network evening news coverage of environmental problems for the period 1975 to 1990. Mass images of environmental problems are evaluated using content and visual analysis of the news broadcasts based on the information provided from Vanderbilt University's Television News Archives and Indexes. Understanding the portrayal and explanation of environmental problems and the images emanating from news

coverage permits an assessment of the effects of mass images on environmental problems and policy over the past sixteen years. The image being evaluated is "an impression of something that is anchored partly in symbolic suggestion and partly in the feelings and assumptions that people have in response to that suggestion" (Bennett 1988, 74). Coverage of issues, actors, events, and problems, thus, are based on information, which is suggested to be important based on its coverage, presented by network news.

The study period selected begins at a time when interests in air and water pollution were being replaced by concerns over the general disregard for environmental problems that involved toxic, hazardous, nuclear, and solid wastes. Further, in an era placing increasing emphasis on citizen participation in environmental policy making, it is essential that the information base available to citizens for evaluating environmental problems be understood (Amy 1987; Susskind and Cruikshank 1987; Bingham 1986). Specifically, this study is interested in the coverage of environmental problems involving toxic chemical, hazardous, and nuclear wastes; these types of waste problems are the "second generation" problems (Kraft and Vig 1990b) or the problems most prevalent during the second "Environmental Era" (Rosenbaum 1991, chaps. 1 and 2; Kraft and Vig 1990a). Related to these problems is solid waste, which is also included in this study as it exhibits characteristics comparable to second generation problems (U.S. EPA 1988; Tchobanoglous, Theisen, and Eliassen 1977). Second generation problems are the result of the toxic, hazardous, and

nuclear byproducts and wastes generated by our technologically advanced society that contribute to the degradation of the environment. Similar to these problems, the feature that makes solid waste analogous to the other second generation problems is the waste disposal problem. Solid waste is primarily the result of the nonhazardous wastes produced by commercial businesses and industries and the consumer wastes disposed of by municipalities (U.S. EPA 1988, 77-92). Some solid wastes disposed of in landfills, however, will combine with other waste materials to form toxic or hazardous waste substances (Rosenbaum 1991, 49-52). Although less attractive politically, the solid waste issue is proving as problematic for policy makers as are toxic, hazardous, and nuclear waste problems (Rosenbaum 1991, 52).

Understanding images of environmental problems is important for evaluating the effects posed for public opinion and environmental policy in this communication age. Specifically, this study proposes to determine the extent to which the network evening news focuses on second generation environmental problems and the emerging images of these problems that are communicated to the mass public. The affect of these images on the environmental policy process will also be explored.

Television, the Network Evening News, and Mass Images

As a component of television, the network evening news possesses certain characteristics of other television programming. It achieves emotional appeal by relying on emotion, drama, and entertainment, which is

complemented by personal intonations, graphics, pictures, and visuals (Bennett 1988, chap. 2; Snow 1983, chap. 5). This emotional and visual appeal enhances television's advantage for interacting with the mass public, which is what distinguishes it from other forms of media. This unique advantage allows the evening news to acquire unprecedented trust and influence relative to other mass media (Snow 1983, chap. 5).

Citizens rely on network news coverage for information primarily to judge issues and policies. The evening news has the extraordinary potential to educate, shape, and fashion popular opinions with its ability to reach millions of viewers "instantaneously and simultaneously" (Graber 1989b, 149). The news abbreviates coverage of problems and issues through briefly summarized and succinctly expressed story segments (Bennett 1988, 23-25). These stories convey information to the mass public in a non-threatening, familiarized, and personal manner that reinforce the story's believability (Bennett 1988, 23-25; Epstein 1973). Through story content and images, the network news provides meaning by defining and interpreting problems and issues. Portraying the information from its perspective enables the network evening news to impress its perceptions and judgements upon the mass public (Krosnick and Kinder 1990; Dye and Zeigler 1986, chap. 5; Weiss 1969).

By deciding what is newsworthy and deserving of coverage, the network evening news occupies a formidable role as gatekeeper of information for the mass public (Ranney 1983, chap. 1). The network evening news stories

transform problems and issues into "real-fiction," mediated or secondhand information (Ranney 1983, 22-23; Nimmo and Combs 1990, 17-18).

Increasingly, network evening news sets and manages reality with its ability to legitimate problems and issues through coverage, which gradually becomes "the paramount reality in society" (Snow 1983, 166). The network evening news, thus, occupies a principal role in communicating information to citizens based on its ability to guide and mediate the information the mass public receives.

Television, the Network Evening News, and Public Opinion

Network evening news shares reality based on the information and images it communicates about problems and issues to the mass public. Early studies examining media impact on the mass public, however, found that the media are of minimal consequence (Campbell et al. 1960; Katz and Lazarsfeld 1955; Berelson, Lazarsfeld, and McPhee 1954). Conversely, later agenda setting research, another approach to the study of media effects, suggests that media set the agenda for the mass public. These studies conclude that media shape what problems people consider by presenting them the problems to **consider** (Behr and Iyengar 1985; Lang and Lang 1981; Erbring, Goldenberg, and Miller 1980; McCombs and Shaw 1972; Cobb and Elder 1971). The "media effects" research, like agenda setting research, assumes that media tell people "what to think about." These studies demonstrate that, rather than merely shaping what people think about, the information communicated by the

network news helps people formulate opinions on problems and issues. Media effects corroborates and furthers agenda setting research by demonstrating that media influence public attitudes as they evaluate (think about) and form opinions based on the information presented by network evening news (Krosnick and Kinder 1990; Entman 1989b; Iyengar and Kinder 1987; Page, Shapiro, and Dempsey 1987; Protess, et al. 1987; Gerbner et al. 1982; Iyengar, Peters, and Kinder 1982). According to these studies, it is by shaping the information the mass public receives that mass media influence "the way people can and do think politically" (Entman 1989b, 366).

To research media effects is to depend on information processing and priming theories for establishing linkages between the information communicated by network evening news and the opinions formed from this information (Krosnick and Kinder 1990; Entman 1989a, chap. 4; Iyengar and Kinder 1987; Gerbner et al. 1982). Generally these theories assume that people process information using cognitive structures that help them organize information for later reference.¹ People, however, use shortcuts to minimize their effort when referencing information; they rely on recently acquired information that is instantaneously and effortlessly accessed (Krosnick and Kinder 1990, 499; Iyengar and Kinder 1987, chap. 7; Weiss 1969; Sears 1969).

¹Many ways of referring to belief systems currently exist, for example, cognitive mapping, social scripts, and constructs. I use Graber's discussion of "schema" to define what I call belief systems which are the way citizens "organize knowledge about situations and individuals that has been abstracted from prior experiences" (Graber 1984, 22-25).

Central to the application of information processing and priming theories to media effects is that the more attention granted problems and issues by the network evening news, the more salient they become. Issue salience is nourished by the constant repetition of information by network evening news coverage. This coverage over time underscores the importance of a problem or issue for the mass public. The salience accorded the problems and issues impresses upon the mass public, such that citizens will recognize and integrate information about these particular problems and issues into their cognitive structure. This effect is heightened if the network evening news presents information about new or unfamiliar issues; because they are not prepared, or are unwilling, to "counterargue" about these types of problems and issues, citizens tend to accept the presentation offered by the network evening news as their meaning (Iyengar, Peters, and Kinder 1982, 854). Further, through the repetition of information over time the network evening news may "alter the foundations of public opinion" (Krosnick and Kinder 1990, 500). Consequently, the more information communicated to citizens, the more informed they are and the more judgements they become capable of making; this makes them more susceptible to influence by their primary information source, the network evening news.

Another aspect of media effects is its socialization potential, especially for children and young adults. Television viewing occupies an estimated 24 to 31 hours a week among two to seventeen year olds giving it tremendous

Imp

potential for influencing attitudes on various issues. This is especially true for issues for which citizens have no personal experience or social guidance (Graber 1989b, chap. 5; Chaffee and Schleuder 1986; Reese and Miller 1981). The fact that the mass public derives most of its information from television may critically affect attitudes about environmental problems and thus, future policy development.

PUBLIC POLICY AND THE COMMUNICATION OF INFORMATION BY THE NETWORK NEWS

The Roles of Media in Public Policy

Three areas of media importance in the public policy process have received attention in the literature: (1) as setting the policy agenda; (2) as an interpersonal communication tool among policy makers; and, (3) more recently, as a systems component in the public policy process.²

The media's part in the public policy process has been focused largely on their agenda setting or agenda building aspects. Concern for the role of communications in the policy process from the agenda setting perspective lies in understanding the relationship among media content, public opinion, and political action. The media, by reporting on selected phenomena or incidents, magnify problems and issues, directing public attention to them and creating a "political climate that determines the likely thrust of public opinions" (Graber

²This framework for communications in public policy originates with Cobb and Elder (1981, 391-393).

1989b, 287). The media, therefore, are an important component in defining or setting the policy agenda.

Although communications traditionally has been considered incidental to the public policy process, its recognition as a part of the "internal dynamics" of the policy process has established its relevance in policy research (Cobb and Elder 1981, 392; Linsky 1986; Kingdon 1984, chap. 3). Media's relevance in the policy process centers primarily on their role in assisting with interpersonal communications among policy makers (Cobb and Elder 1981, 392). Media have come to act as "communicator[s] within [the] policy community" as policy makers dealing with similar problems use media to communicate information across agencies and, at times, even within agencies (Kingdon 1984, 63). The media, thus, are considered a source of "readily usable, policy-relevant information" for policy makers and other actors interested in government activities (Cobb and Elder 1984, 392).

Recent approaches to understanding communications as an aspect of the public policy process have recognized its capacity for engaging the mass public at various stages³ of the policy process. Given the attention afforded participatory public policy, in which efforts are made to maximize the inclusion of citizens in the public policy process, media have become the chief "purveyors and interpreters of the public record" for citizens and are viewed by some as

³There are several stages in the public policy process: 1) problem identification/definition/formation, 2) policy formulation, 3) policy adoption 4) policy implementation, 5) policy outcome and evaluation, and 6) policy redesign.

"the essence of policy" (Cobb and Elder 1981, 392 and 393, emphasis in the original). The abundance of information available to interested citizens attending to the policy process is overwhelming, and points to media's importance in providing citizens accurate and reliable information about public policies. Media's interpretive functions are not confined to a single stage of the policy process; rather, every process stage is affected by the information reported and images portrayed in news stories (Linsky 1986). The communication of information affects each stage of the policy process, from agenda setting to evaluation and redesign, and becomes an "ongoing process of communication and feedback" between the actors involved in the policy process, the mass media, and the mass public (Cobb and Elder 1981, 393).

The media effects on the policy process are apparent in the environmental policy field. The agenda setting function of the media, for example, is evident in its handling of coverage on hazardous and toxic substances. The "widespread media coverage of hazardous chemical spills, newly discovered abandoned toxic waste sites, and other real or alleged crises involving dangerous substances" generated a widespread awareness of these problems among the public, who expected the government to respond to the situation, which it did (Rosenbaum 1991, 45). The federal government's response included a plethora of regulatory statutes directed at curtailing and controlling the use of toxic and hazardous substances.

Oil spill coverage reveals media's ability to affect the formulation and adoption stages of the environmental policy process. Media coverage of the **Exxon Valdez** spill was "emblematic of an already recognized environmental dilemma" and aided in promoting environmental issues to their highest levels of public salience in years (Mitchell 1990, 89). The media effects, however, did not end with raising public concern, they were used carefully by environmental interests to "[reinforce] their legitimacy as genuine representatives of a large constituency" (Mitchell 1990, 95). This legitimacy assisted environmental interest groups in securing a compromise among interested actors on provisions of the Clean Air Act. As congressional members grew cognizant of the shift in the political climate for environmental protection, the legislation moved quickly out of committee, where it had been delayed (Mitchell 1990, 96), and was enacted shortly thereafter.

The media effects in the implementation and evaluation stages of the environmental policy process are evident in the employment of the Resource Conservation and Recovery Act (RCRA) and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) in response to the disposal practices for toxic and hazardous wastes. RCRA, a major legislative act designed to "control the treatment, storage, transportation, and disposal" of hazardous waste was passed in the mid-1970s amid tremendous conflict and controversy among federal agencies, environmental and industry interests, and Congress (Kraft and Vig 1990a, Appendix I; Landy, Roberts, and Thomas 1990,

chap. 4). The integrity of RCRA was tarnished by the complexity of its regulations, which lacked explicit intentions and yielded the Environmental Protection Agency (EPA) immense discretion; these factors, when combined with the media hype surrounding the issue of toxic wastes, collectively contributed to the public's mistrust of the government's handling of the toxic waste situation (Landy, Roberts, and Thomas 1990, 101-107 and 113).

Similarly, public concern over toxic and hazardous wastes escalated dramatically in 1980 after being aroused by the reporting of the Love Canal, New York incident, where a toxic chemical waste dump was discovered and linked to health complications among local residents (Levine 1982). The progress of the CERCLA, although slow and cumbersome, was affected by media coverage of the Love Canal situation. Attention to the incident at Love Canal "reinforced the view that hazardous waste was a serious public health problem" (Landy, Roberts, and Thomas 1990, 120), but ignored the problem of complexity and "the issues and choices involved in hazardous waste control" (Landy, Roberts, and Thomas 1990, 126).

Premature policy evaluations, thus, confounded the policy process for both RCRA and CERCLA; rather than the usual policy process of evaluating a policy once implemented, RCRA was being evaluated prior to implementation. The evaluations, moreover, were based upon incidents peripherally associated with, but not unrelated to, the policy itself. The public concern was attributable to media coverage of toxic waste disposal at Love Canal, information for which

the public seemingly used to evaluate the CERCLA. Media coverage of toxic waste disposal, thus, affected the implementation and evaluation of the transfer, storage, and disposal of hazardous substances regulations being developed by the EPA in the RCRA and CERCLA.

The importance of media as a component in the public policy process is demonstrated by their capacity to affect policy developments and consequences. The information and images derived from media's depiction of policies "are generally a crucial intervening variable" upon which citizens "and, to a lesser extent, political elites" can evaluate policies (Goggin, et al. 1990, 145). Citizens', policy makers', and the policy stakeholders' evaluations of public policies give policies meaning and consequently, determine their fate. Thus, by providing short and concise summaries of complex public policies, the media interpret and explain policies to the mass public's, policy makers', and stakeholders' dissatisfaction or gratification. These summaries are illustrative of how media affect public policy and act to acquire and sustain support for, or opposition to, public policies by all interested actors.

Public Policy, Mass Media, and the Mass Public

Contemporary American public policy has experienced an expansion of efforts to integrate citizens into the public policy decision making process by soliciting their opinions and seeking their active participation; this is especially true for environmental policy making. Until the early 1970s, environmental policy decisions were reached largely by specialists, scientists, and experts in a

"closed system of administrative decision making . . . [in] which [there was] little meaningful public or subgovernment participation" (McCabe 1987, 18). The structure of environmental policy decision making began to change in the mid-1960s and 1970s as citizens and other levels of government started questioning the decision making process and demanding more recognition in the policy process; thus, a more open system of decision making ensued (McCabe 1987, chap. 1; O'Brien, Clarke, and Kamieniecki 1984). This type of decision making process in public policy allowed many new actors to make "significant contributions to the policy process" (McCabe 1987, 18).

An open systems approach to environmental public policy incorporates a heightened role for citizen participation in the environmental policy process. The newfound emphasis on citizen participation was manifest by various "forms of public access such as adjudication, comment periods during rulemaking, the review of environmental impact statements, and public hearings that are designed to help the government make better decisions, not to transfer decision authority" (McCabe 1987, 23, note 37).

The opening of the decision making process for public policies naturally directs attention to the quality and quantity of information made available to citizens for judging policies. In fact, media were the principal catalysts in the movement for increased citizen participation in the policy process as they began to question specific government activities. Information communicated to citizens about second generation environmental policies grants them the ability

to assess the seriousness of such problems and issues. Citizens' judgements, thus, become crucial in conceding problems or issues the distinctions of **public** problems or issues about which citizens and government alike must be concerned. This distinction is critical to second generation environmental problems or issues acquiring public salience because "conditions in society that are not recognized as problems never get on the agenda of government policy makers; those that are, do" (Starling 1988, 62). Thus, media's communication of information to citizens about incidents, especially those pertaining to second generation environmental problems, pose significant ramifications for public policy as they help citizens recognize and legitimate these incidents as genuine public problems or issues.

Combatting these problems and issues will prove difficult and challenging. Before proposed alternatives to second generation problems can be seriously considered as solutions, public support must be engendered and sustained. The importance of media to defining second generation problems is undeniable; these problems are difficult to understand, and the media, in order to report on these issues, must interpret these problems in an understandable manner (Cobb and Elder 1981). Media's significance is realized further with respect to second generation problems as these problems are characterized by their "[c]omplex or technical definitions [which] create confusion and uncertainty [and] are not conducive to the mobilization of the support required for major policy innovation" (Cobb and Elder 1981, 410). If the public is to be adequately

informed and educated to perform its policy responsibilities in an open system, the media, in reporting about and portraying these issues to the public, must successfully interpret and explain second generation problems to them.

The Effects of Mass Media on the Public Policy Process

By explicating public policy to citizens throughout the policy process, media occupy a crucial role in interpreting and defining the process. Media's reporting and portrayal of policies has "altered the policy process, increased the amount of information available to the public, [and] contributed to the continuing fragmentation of the policy process" (Cobb and Elder 1981, 413). According to Cobb and Elder (1981, 413), the coverage devoted to public policy has "undermined [the] intermediate structures that have traditionally served to make the process comprehensible and meaningful to the average citizen." The role of media, thus, permeates the policy process by: helping to identify and define problems and issues, aiding the problem or issue's recognition by officials (agenda setting), assisting with the selection of a response or solution (formulation/adoption), acting as a catalyst for implementing a solution (implementation), and providing the public with an understanding and interpretation of the policy results (outcome/evaluation/ redesign).

By predisposing public attitudes about a problem or issue, the network news contributes significantly to conferring policy status upon the problems and issues that it covers (Starling 1990, 62-64; Kingdon 1984, 61-64). In the early stages of the policy process -- the problem identification, problem definition and

agenda setting stages -- the media is central to establishing what problems and issues are important as they "determine what issue[s] they [the public] will be viewing -- and which they will not" (Starling 1988, 62). Through its dramatic portrayal of problems and issues, the network news possesses tremendous potential for positioning problems and issues in the "public eye" and ultimately identifying and defining what problems will be salient and important to the public. Regardless of events' stimuli, "what ultimately counts is the interpretations given to them" (Cobb and Elder 1981, 409).

News coverage at an early stage of the policy process not only influences the public, but also the policy makers, who must respond to news stories raising questions about particular problems or issues; they, by their mere presence, connote import and render the situation significant for the public (Willis 1991, chap. 5). Regardless of their attempts to pacify the public with qualifying phrases and disclaimers, the policy maker's comments are perceived as suggesting a likely or eventual policy response (Starling 1990, 62-64). Mass media, specifically the network news, in focusing attention on the government's response to a problem or issue, increase its salience, promoting the problem or issue to a level of public concern within a short time.

Increasing problem or issue salience promotes variability in the perceived seriousness of the problem, which acts to create difficulties in implementation. These various perceptions combine to affect the numerous actors in the policy process differently and thus, become "crucial determinant[s] of policy

implementation" (Goggin, et al. 1990, 144). The media "monitor and interpret environmentally relevant science, then translate their findings into terms understandable to laypersons and package the information attractively for mass communication" (Rosenbaum 1991, 12). The media are central to advancing differing perceptions among government officials, citizens, and interest groups, all of whom interpret media reports distinctively. Based on how the various factions encompassing the policy process react to coverage, the media serve as "crucial intervening variable[s]" in determining a preferred policy direction (Goggin et al. 1990, 145; Sabatier and Mazmanian 1980). Moreover, as the media afford selected problems and issues coverage, program implementation is swifter and void of extensive revision (Goggin, et al. 1990, 145).

Throughout the public policy process media continue to influence public perceptions as citizens evaluate the success of policies offered as solutions to specific problems or issues. As an "increasing proportion of people's life experiences are vicarious through the media," their evaluation of public policy successes or failures should commence no differently (Starling 1990, 203). Basically, citizens must rely on media accounts of the policy result or outcome in deciding whether the policy solution is sufficient. Media, thus, wield tremendous power in designating the factors that will be considered in determining whether a policy succeeds or fails; this despite possible cost, benefit, risk, and impact assessments to the contrary.

Media, thus, serve as catalysts in the public policy process; they affect the policy process from definition to implementation by maintaining problem or issue saliency throughout the process. Media influence the process by depicting and interpreting the relative seriousness of problems or issues and provide relevant actors with an understanding of citizens' preferences. The media's influence is acute, particularly for environmental affairs as public concern for the environment and strength of support for environmental protection have soared to unprecedented heights during the 1980s (Mitchell 1990; Rosenbaum 1991, 25-28). Equally important are media's importance in communicating information about second generation environmental problems -- it must convey complex information without confusing or needlessly alarming citizens. Recognizing that the "mass media are most effective in changing beliefs or conveying new information on those matters that are relatively removed from people's direct experience, but for which persons have an interest in acquiring information" (Wagner 1983, 414), it is troublesome to note that much media coverage of waste issues is sensationalized by stories portraying "'the worst case' [scenario] . . . exaggerated out of proportion" (Krupar and Krupar 1989, 17). Such portrayals, thus, prove destructive to the policy process when solutions to the waste dilemma are being sought and point to the significance of media images in this controversy. As the public is continually placed "in the middle, confused and divided" between industry, which cries for economic expansion and competitiveness, and

environmentalists, who stress preservation and survival, the significance of the images associated with the waste issue are amplified immensely as the public becomes "an authority in the decision-making process on a large scale" (Krupar and Krupar 1989, 14, 15).

Public Policy, Mass Media, and the Communication of Risks and Hazards

Information on environmental risks or hazards⁴, which by definition include second generation environmental problems, are communicated to the public primarily through the mass media. The communication of risk or risk incidents, the probability that "harm to human health, the ecology, the economic system, or the quality of human life [can occur]"⁵ (U.S. EPA 1990, 2), is altered extraordinarily when defined by media (Singer 1990; Wilkins and Patterson 1990; Kasperson, et al. 1988). In fact, media are considered a crucial "intervening variable . . . that complicates the risk communication process in a variety of ways" (Wilkins and Patterson 1990, 12). Media portrayals of environmental problems or risks transform cumulative scientific and technical research from the laboratory to the field instantaneously via the brief report.

⁴Distinctions are made in the literature between risks, the probability of an incident occurring due to a hazard, and hazard, the threat that an incident poses to one's health, safety, and welfare (U.S. EPA 1990; Hohenemser, Kates, and Slovic 1983). Such a distinction is certainly valuable, but for the immediate purpose of this research they are discussed jointly.

⁵Also, Kasperson, et al., define "[r]isk events thus [to] include routine or unexpected releases, accidents (large and small), discoveries of pollution incidents, reports of exposures, or adverse consequences" (Kasperson, et al. 1988, 178, note 4).

Moreover, when the media function as public conduits of scientific information, they cast the information in a "social context" within which it is interpreted (Kasperson, et al. 1988, 179; Wilkins and Patterson 1990). The social context, the combining of cultural, psychological, and social elements of public perception, is crucial in the communication of risks and hazards as it frames the public's understanding of environmental risks (Kasperson, et al. 1988).

Subsequent interpretation normally challenges the research by altering "the focus and scope of risk assessment" to "elicit strong public concern and produce extraordinarily severe social impacts, at levels unanticipated by conventional risk analysis" (Kasperson, et al. 1988, 179 and 177). The difficulty of explaining risks and hazards to the public, thus, is confounded dually by "the need to use risk analysis to design public policies on the one hand, and the inability of the current risk concepts to anticipate and explain the nature of public response to risk on the other" (Kasperson, et al. 1988, 178).

Consequently, media, acting as the primary information source for the public, cannot provide the adequate and accurate information requisite for properly judging environmental risks; this situation is especially acute for network news considering their respective time and information constraints and demands.

Second generation environmental problems are deemed newsworthy and receive coverage primarily because they contain two inherent attributes -- drama and controversy -- characteristic of good news and which stimulate public interest (Stern 1991; Wilkins and Patterson 1990; Nimmo and Combs

1985). Conflict is virtually assured in appraising environmental risks or hazards through the choice of research methodologies, which are disputed by virtue of "[c]hoices of equipment, laboratory procedures, and mathematical models [because they] may make the difference between a conclusion that a product or activity is hazardous and a conclusion that it is not, or that no hazard has been found" (Stern 1991, 102). Thus, information about environmental risks provides the network news with material containing both drama and conflict; these characteristics enable the network news to "[intensify] the problem by accenting the conflict . . . [or they] may create the appearance of conflict for the sake of drama and the audience interest that follows" (Snow 1983, 23). Although conflict and complexity make good news, "fitting such technical or elusive information into the constraints of news" imposes serious limitations to thoroughly explaining environmental risks and hazards to the public (Wilkins and Patterson 1990).

The media, particularly the network news, in the process of explicating information to the public, recast the public's disposition toward environmental problems with fundamental choices made during story selection. Given the multifarious and controversial nature of second generation environmental problems, the mass-mediated communication process acts to escalate interest, heighten fears, and deepen concern for citizens through fragmented and disjointed coverage (Stern 1991; Wilkins and Patterson 1990; Bennett 1988). This manner of presentation, communicated ordinarily and predictably by the

network news, clearly prohibits the individual from analyzing the situation relative to its overall societal and political context (Wilkins and Patterson 1990). Risks and hazards are defined largely by the way they are communicated by media, not by their scientific or technical explanation. The news, thus, amplifies the information in a manner that attracts attention to the drama and conflict of the situation at the expense of informing the public.

MASS IMAGES OF WASTE PROBLEMS

Environmental issues in the United States reached unprecedented prominence during the 1980s. For example, the 1988 presidential election featured each candidate prominently positioning himself on environmental issues and **Time** magazine selected Earth for its annual "person of the year" (**Time** January 2, 1989.) By drawing attention to the strong public support emerging for environmental issues, it appears that the national media in conjunction with other "triggering events" acted as catalysts for this increased support in focusing the interest of national leaders on environmental problems (Kraft and Vig 1990b, 8, 11-12).

Despite considerable success in environmental policy making, much remains to be accomplished. Kraft and Vig (1990b) assert that policy remedies to date address only the "easy" problems and that "second generation" problems will entail serious choices as marginal gains in environmental quality impose greater costs on all citizens given the "environmental return" (Kraft and

Vig 1990b, 23). Second generation problems are those environmental problems involving toxic chemicals, hazardous wastes, and nuclear wastes (which are also referred to as radioactive); also similar to these problems, and seemingly appropriate for investigation, is the solid waste problem as it exhibits characteristics comparable to second generation problems. Second generation problems are the result of the toxic, hazardous, and nuclear wastes that contribute to the degradation of the environment. Similar to these waste problems is the solid waste problem, which shares the common feature of waste management with the other second generation problems. Waste disposal, whether it is toxic, hazardous, nuclear, or solid waste, is basically similar for all wastes -- they are processed, buried, or incinerated. Solid waste, however, is primarily the result of the wastes produced by municipalities and is generally produced by commercial businesses, industries, consumers, and residents. The distinguishing characteristics of second generation waste problems "are proving even more challenging than regulating [the] 'bulk' air and water pollutants [of] the 1970s," the "first generation" environmental problems (Kraft and Vig 1990b, 23). Finally, the solid waste issue must be considered a part of the second generation waste problem because, as Rosenbaum (1991, 52) states, "[it] may lack the public appeal and political glamour of other environmental issues like toxic waste management, but its solution will nonetheless become a major issue in the environmental politics of the 1990s."

Toxic and hazardous wastes are byproducts of "solvents, oils, acid wastes, cyanide solvents, pesticide wastes, and other substances with high levels of compounds that threaten human health or the environment" (U.S. EPA 1988, 85), while nuclear wastes are byproducts of "nuclear weapons production and fission reactors" (League of Women Voters Education Fund (LWVEF) 1985, 7-10). Hazardous wastes substances are "toxic, corrosive, ignitable, or chemically reactive materials posing threats to humans . . . and the ecosystem" (Rosenbaum 1991, 214). Toxic wastes substances are comprised of "materials that produce 'detrimental effects in living organisms'" that cause internal organ and tissue damage to humans, are carcinogenic, and effect the ecosystem (Rosenbaum 1991, 214, 214-215). Nuclear wastes are unsafe because they release "radioisotopes, that are energetically unstable" and generate dangerous levels of heat; nuclear wastes are comprised of spent fuel from nuclear reactors, high-level waste, transuranic wastes, low-level waste, and uranium mill tailings (LWVEF 1985, 7-9). Solid wastes are generally classified as nonhazardous and municipal wastes; nonhazardous wastes include industrial refuse, wastewater treatment sludge, and other materials discarded from commercial, mining, and agricultural activities, while municipal wastes generally consist of materials from community activities which include household and commercial wastes (U.S. EPA 1988, 77-110). These problems, as byproducts of the industrially and technologically advanced lifestyles Americans demand, pose serious risks to human health, the environment, and the ecosystem,

therefore combatting them will entail significant tradeoffs for current lifestyles (Rosenbaum 1991, 214-222).

Confronting second generation problems is further complicated by their imperceptible nature; most people are generally unaware of the threats these problems pose. The mass public tends to be less informed about and unfamiliar with second generation problems as these problems fail to pose a conspicuous threat to, and are not immediately recognizable by, most citizens. Second generation problems, moreover, tend to be concentrated in specific states or regions and lack the ubiquitous threat of the air and water pollution problems that characterized the more conventional pollution battles over the "first generation" problems of the 1970s. As second generation problems, hazardous and solid waste problems have also experienced increased salience in the last decade as the disposal situation for each garnered considerable national attention. As a result of the unfamiliarity, lack of ubiquitous threat, and increased saliency factors, information citizens have on second generation problems is rarely a result of direct experience; rather, their information is usually acquired from secondhand sources or accounts.

Several incidents covered extensively by the network news focused national attention on problems associated with wastes, for example Earth Day and threats to public health such as contamination at Love Canal and Times Beach. The national attention these events received have influenced citizens' perceptions about these problems (Landy, Roberts, and Thomas 1990, chap.

4). The fact that people are less familiar with and largely unaffected by these types of problems creates a situation that allows the network evening news to do more than merely inform the public, it allows the network evening news to depict and define the problems as well. As such, waste problems offer premier examples for examining the potential influence network evening news coverage has on the mass public's perspective of these problems. As citizens depend on the network evening news for information about these problems, their perspectives become mediated reality. The mass public must judge and evaluate the events surrounding waste problems based on the information they acquire from a brief and quickly summarized news story. Yet, of significant consequence to environmental policy over time are the mass public's perceptions and interpretations emanating from the coverage and portrayal of these problems by the network evening news. Given the hyperpluralistic American political environment, where public access to legislatures, agencies, and courts is practically guaranteed, how mass images affect the mass public's understanding of these problems and issues is critical. Thus, the network evening news holds a prominent position in the policy process with its capacity to define and inform the public about problems and issues.

As citizens confront waste problems they are not affected by directly, their initial perceptions are likely framed by the information they are presented with, not from actual experiences. If over time the network evening news stories manifest certain images or perspectives of environmental problems,

citizens' opinions will become established and difficult to challenge. Thus, citizens' opinions are continuously affected by the communication of information on the network evening news, the most accessible source of information available to them about waste problems and issues.

MASS IMAGES OF WASTE PROBLEMS: THE LOVE CANAL CASE

An Overview of the Love Canal Situation

Love Canal, New York, a community located north of Buffalo, attained national notoriety in the late 1970s when it was discovered that residential areas were developed adjacent to an abandoned underground chemical waste disposal site. The site served as a chemical waste disposal site for the Hooker Chemical Company until the 1950s, when it was capped with a soil covering. The area around the site eventually developed; the development required new road construction, water, sewer and drainage projects, and utility construction. It was during this period of growth that the canal walls suffered numerous breaches which fostered chemical waste leaching (Levine 1982, chap. 2; Linsky 1986, 71-71; Linsky, et al. 1986, 218-222). The issue of chemical waste went unnoticed until 1976 when the International Joint Commission, in a routine monitoring visit to check water quality in Lake Ontario, discovered traces of an insecticide, Mirex, in fish (Linsky, et al. 1986).

Though Love Canal originated with the reports of chemicals in Lake Ontario, the Lake Ontario findings, through local media portrayals, were related

to complaints about health problems from the noxious vapors and seepage permeating the basements of peoples' homes located near the abandoned waste site (Linsky 1986; Levine 1982). Significant media coverage in local and regional newspapers ensued, eventually prompting the New York Department of Environmental Control (DEC) to investigate the contents of the discharge and vapor. Questions were raised about a possible link between the chemicals discovered in the lake and the health problems of residents living near the waste site in Love Canal; subsequent investigations of these questions were due largely to the persistent efforts of media to ascertain the origin of, and culpability for, the situation (Linsky, et al. 1986, 221). Similar media coverage proceeded for several months, eventually expanding the situation to a crisis level to include top state and local government officials, the Governor of New York, Hugh Carey, and the United States House of Representatives, Representative John LaFalce (Linsky, et al. 1986; Levine 1982). Ultimately, the EPA and President Carter were included. As revelations ensued and the situation changed, its significance was concomitantly amplified. The issue transpired innocently from a routine inspection and the discovery of chemical substances in Lake Ontario to a national emergency.

Media coverage of the Love Canal situation established it as a significant public problem; this was corroborated further by the pronouncements of emergency conditions existing at Love Canal (Linsky, et al. 1986; Levine 1982). John Whalen, the New York Commissioner of Health, reported research results

that concluded the seepage and vapors found in area homes contained carcinogenic compounds. Peoples' fears were raised further upon his announcements that spontaneous abortions occurred in the area at an abnormal rate, an indication of toxicity, and that pregnant women and children two years old or younger be relocated (Linsky, et al. 1986, 224). Federal officials followed Whalen's announcement and declared a state of emergency; New York state government initiated a construction program to cap the site with clay and a plan to control leaching from the waste site (Linsky, et al. 1986; Levine 1982).

The federal government became integrally involved in the Love Canal situation in 1980. New York state government appealed for assistance to the federal government for financial support of the construction and relocation of families. Seeking redress for the situation, the EPA initiated legal activity in cooperation with the Department of Justice. Establishing Hooker Chemical Corporation's liability was paramount to winning any lawsuit, thus ensued the impetus for a pilot study of residents to establish whether linkages between health problems and chemicals found in the area could be substantiated; this same pilot study supplied more than evidence against Hooker Chemical, it, matched with media devices, dictated the policy actions of federal and state agencies charged with resolving the situation.

EPA was responsible for selecting a firm or agency to conduct the pilot cytogenetic (or chromosomal) study, which was intended as a very preliminary

investigation to uncover evidence to determine whether conditions warranted a more complete investigation (Levine 1982, 138-140). The initial study was to provide information for determining if the results were worthy of "a full-blown rigorous scientific investigation which could be used in court" (Linsky 1986, 73); never was it intended to provide conclusive data. Problems surrounded the study from the outset. Selected to conduct the study was Biogenics, headed by the controversial Dr. Dante Picciano (Linsky, et al. 1986). He had been involved with a controversial chromosomal study for Dow Chemical. Time and money were other factors that confounded the pilot study. Time, according to Dr. Picciano, and money, according to the EPA, did not allow for the selection of a control group, a poor methodological choice that eventually raised more questions than solutions; furthermore, the careless approach to the pilot study complicated the ensuing policy dilemma.

The study, completed in early May, 1980, involved the testing of 36 residents and reported chromosome damage in twelve of the residents. Findings from the study were forwarded to the EPA in a report concluded tentatively based on the preliminary nature of the study and the lack of a control group. Racing against a newspaper story based on information supplied by an agency "leak," EPA officials coordinated meetings with all parties involved with the situation and apprised them of the results and the situation. It was agreed that the EPA had to assemble a group of scientists to verify the data, notify the participants of the study before the article was released, announce the results

of the study at a Washington press conference, and meet with local, state, and national officials concerning the findings. The day arrived. The study participants were notified, the newspaper story was released and contained alarming information about the dangers and implications of chromosomal damage, and officials at the press conference informed the public of the situation and the responses being considered by the federal government. Ultimately, resolutions of the Love Canal situation revolved around two primary questions -- costs and relocation. Officials and citizens wondered how much would the federal government pay for the cleanup of Love Canal?, how many families would be relocated?, and whether the relocation would be temporary or permanent? The state and federal governments ultimately resolved to buy the homes of and permanently relocate more than 500 families living in Love Canal at the cost of more than 30 million dollars (Levine 1986, 213-214).

Love Canal, the Media, and Public Policy

The dynamics of the Love Canal situation were many; several other incidents or events occurring or transpiring simultaneously with it were: 1) the Superfund legislation was matriculating through Congress; 2) the disputes among scientists concerning chromosomal studies that linked chromosomal damage to the chemical waste site in Love Canal; 3) the "leaky" EPA; 4) the disputes surrounding the division of responsibility among federal and state governments; 5) the politics of science versus public hysteria; 6) the politics of a presidential election year coupled with the New York being a state with many

votes; and, 7) the problem of issue competition for news space and time between the Love Canal story and other issues, which ranged from other crises, the hostages and volcanic eruptions, to political campaigns, Reagan, Anderson, and Kennedy. All of these situations factored into the state and federal policy-making decisions and all involve relationships with the media.

Following the initial discovery of substances in Lake Ontario, media coverage ensued, appearing first in the **Niagara Gazette**. The initial coverage served as the catalyst that familiarized a nation with the plight of the people of Love Canal, specifically, and the threat chemical wastes pose for society, generally. Eventually, media coverage of events affected the disposition of government officials, the mass public, and the residents of Love Canal. Due to its proximity to the media and information center of the world, New York City, the Love Canal situation received extraordinary coverage. The location, coupled with the drama and conflict of the situation, generated a tremendous amount of interest from the national media; in fact, the **New York Times** essentially turned the incident at Love Canal into a national event singlehandedly. Media acted as information conduits for the nation and realized an integral, albeit indirect, role in the decision making process of government policy makers. The media was clearly involved throughout the situation and basically ensured Love Canal national prominence. By maintaining issue saliency with coverage, media posed the Love Canal issue as a policy dilemma for government, defining the issue as a problem and enabling it a position on

the agenda of government policy makers at all levels (Starling 1988; Kingdon 1984). As media raised interests about the chemicals in Lake Ontario and Love Canal with its early coverage, government officials were forced to respond, rendering the situation added significance and conferring its policy status (Willis 1991).

Policy makers also reacted to the situation with self-interest; as Love Canal was being declared an emergency, Superfund legislation was being stalled in Congress (Linsky, et al. 1986). High on the EPA agenda was the Superfund legislation, which, if enacted, empowered it with legal and financial regulations to pursue hazardous and toxic waste cleanup (Linsky, et al. 1986). Thus, the agency viewed Love Canal coverage as a stimulus for the legislation by demonstrating the problems of waste disposal in the United States. More importantly, however, was EPA's attempt to use media as an accomplice in the promotion of the Superfund legislation; ensuing events were to change this relationship, however.

Media seized a principal role in the policy process during the release of the pilot study. Upon acquiring information through an agency leak, media seized an integral role in the decision-making process for resolving the Love Canal situation. Policy makers changed their approach to releasing information on the Love Canal pilot study. EPA officials, learning that the **New York Times** knew about the study and planned to headline it in its Saturday edition, hastily implemented poorly developed plans; EPA plans were compromised as they

were unable to formulate plans thoroughly before approaching the residents of Love Canal and the mass public with the information from the pilot study. For example, the forthcoming article from the **New York Times** prohibited federal officials from debating or conducting further studies or verifying the pilot study. The results that drove policy decisions at Love Canal were suspect and inappropriate for the decisions that followed. Also, the initial reports on the pilot study implied that decisions were made swiftly upon receipt of the information, which only advanced the "seriousness of the results" (Linsky, et al. 1986, 233).

The pilot study framed the Love Canal situation in controversy, uncertainty, and impending peril, which provided media with their principal characteristics for good news -- drama and conflict (Stern 1991; Wilkins and Patterson 1990; Nimmo and Combs 1985). Technical information provides the media with tremendous discretion for interpretation; the difficulty with highly technical information lies in its interpretation, which practically guarantees controversy (Stern 1991). Media perpetuated the conflict of the situation considerably by interpreting the results of the study for Love Canal residents, the mass public, and state and federal policy officials with no emphasis being placed on the tentativeness of the results. Initial media reports alarmed the public significantly by focusing on the chromosomal damage research and the impending peril of its irreversible implications. The complexity of the information only contributed to the uncertainty surrounding the problems and heightened the fears of Love Canal residents and the mass public.

Media's role in the policy process allowed them to guide the policy process by determining which issues were deemed most crucial and needed to be addressed immediately. The results of the initial media reports redirected the focus of the problem unexpectedly from the pilot study to the relocation issue (Linsky et al. 1986, 236). Policy officials had discussed the relocation issue, but specific decisions concerning relocation, whether at all, temporarily, or permanently, remained uncertain. The relocation decision, along with financial responsibility, were decisions championed by the media. Policy officials were forced to respond to the issues raised by media and could not be perceived as ambivalent about issues portrayed as matters of life and death.

The media assumed the role of intermediary among policy officials at different levels of government. Various government officials communicated issues and positions through the media. For example, New York state officials first learned of the integral information contained in the pilot study through the press and responded to and criticized the federal officials handling of the study through the press. Additionally, there were the negotiations about which level of government would assume financial responsibility for Love Canal. Initially, the negotiations were brokered through the media and "before fact-to-face negotiations even began, the **New York Times** was carrying declarations of war back and forth between the parties (state and federal officials)" (Linsky, et al. 1986, 239, clarification supplied). In fact, Governor Carey used the media as a point of emphasis in negotiations concerning financial responsibility by

accusing the federal government of opening the issue to the public and that their inability to handle the situation infuriated the public causing a "psychological emergency" at Love Canal (Linsky, et al. 1986, 240); New York officials felt that this cost everyone and fair restitution would be federal assumption of primary financial responsibility for the emergency.

The politics of the situation manifest itself most vividly through the sharing of costs solution reached by the state and federal governments. President Carter, facing an intraparty nomination challenge by Senator Ted Kennedy (D-MA) entering the Democratic convention that summer, needed a solution to the Love Canal dilemma to aid his maligned northeastern United States campaign and to ensure nomination (Linsky et al. 1986, 228). Governor Carey, also a northeastern democrat, was campaigning for reelection, but his name was surfacing in presidential circles as a potential draftee at the convention (Linsky, et al. 1986, 228). Working relations between Washington and Albany were less than harmonious during this period; each candidate, Governor Carey and President Carter, desperately needed to be perceived as the champion of the people of Love Canal without appearing callous for refusing to accept full financial responsibility of the situation for their respective level of government. For instance, once an agreement was reached, Governor Carey released the negotiated agreement to the media within deadline, which enabled the **New York Times** to run a story that coincided with the morning news conference at which federal officials were to release agreement details for

relocating families at Love Canal. The action on behalf of Governor Carey gave him control of the media agenda; it allowed him to focus the report on factors favorable to his interests and raise questions about the issues that remained undecided in the agreement -- financial responsibility and duration of the relocation effort. Thus, Governor Carey's action: thwarted federal efforts to concentrate on the settlement agreement solely; questioned the ability of the federal government to manage the situation proficiently; and, permitted him to keep the impending issues in the media and thus, due to the **New York Times**, somewhat in his favor. Governor Carey's actions were successful on two fronts: the issue remained in the press and the necessity for action remained at the federal level.

The media proved to be integral actors in the policy process throughout the Love Canal situation and their effect is evident. The issue, ultimately, was never actually resolved: no scientific evidence established a direct link between the chemicals and local health conditions. Salient issues, however, were addressed; the people were permanently relocated and the expense was shared equitably by both state and federal governments. One fact remains, the press commanded a significant, albeit distant, policy making role throughout the Love Canal situation. In fact, Michael Desmond, a reporter for the **Buffalo Courier-Express**, received an EPA special award for merit that recognized in part that "the EPA was prompted to move . . ." based on a series of articles he wrote concerning chemical waste disposal (Levine 1982, 190). Media affected

the actions of policy officials, elected politicians, private industries, and society in general, with its continuous coverage throughout the entire Love Canal episode.

This chapter shows that the influence of the mass media in contemporary public affairs is widely assumed and imperfectly understood. Dramatic cases such as the Love Canal clearly appear to validate this assumption. But what kind of media coverage, in addition to the most notorious cases, over time transforms perceptions into images of policy relevant phenomena? What are the policy implications of such images? These are the fundamental questions this dissertation seeks to explore by systematically investigating network evening news coverage of second generation environmental problems between 1975 and 1990.

PREVIEW OF THE REMAINING CHAPTERS

Chapter Two introduces the model of the communication of images and effects by the network news; the model is the theoretical construct of how the news transpires from reality, to the news' coverage, to the formation of perceptions and images, to the effects of the image. The theoretical propositions guiding this study are given and discussed. Then, moving from the propositions to research questions, and hypotheses, the aspects of the model being researched are presented. The research model, the communication of images by the network news, focuses exclusively on the images the three network newscasts project based on the information each communicates

through the news story. Following the presentation of the research questions and basic framework of study, the analysis of content and the visual analysis methods used are discussed. The chapter concludes with a discussion of the data and the methods being used to locate environmental waste stories through the Vanderbilt University Television News Archive.

The third chapter presents the findings from the analysis of content and summarizes the results of the volume, prominence, complexity, and network groups of hypotheses which directly relate to the first basic research question and partially addresses the second basic research question. An analysis of the content of news stories identifies the trends and patterns of the coverage provided waste issues by the media and conveys a preliminary understanding of the possible images that emanate from news coverage of waste issues.

Chapter Four provides the findings from the visual analysis of news stories and discusses the perspective, image, and network groups of hypotheses. This visual analysis substantiates the trends and patterns of coverage provided waste issues as tentatively identified in the analysis of content. Information communicated to citizens visually, with the sights and sounds of the network newscasts, furthers the findings and suggestions from the analysis of content and produces a comprehensive characterization of the images of waste issues.

The final chapter evaluates the different portrayals and resulting media images of waste issues and summarizes the study; it also assesses the

performance of the posited research model for explaining the dynamics of mass communication through the network news story. Using examples provided by the coverage of waste issues, the potential consequences of media images for public policy in general are offered. Finally, the policy implications of the mass images arising from network news coverage of second generation environmental problems are explored followed by an assessment of the research implications learned from this study.

CHAPTER 2

FROM DISCOURSE TO POLICY: THE COMMUNICATION OF IMAGES BY THE NETWORK NEWS

INTRODUCTION

Understanding the dynamics of the communication of images by the network news to the public is an essential component in the development of public policies. Considering the case of Love Canal and recognizing that the public is increasingly dependent on the network news for information relating to second generation environmental problems, this situation appears especially acute for policies addressing waste problems. Understanding the complex process of conveying information about waste issues via the network news, thus, is aided with a theoretical framework that summarizes the foundations of this study.

Modeling Network News' Communication of Images

Theorizing about the dynamics of the communication of information to the mass public involves acquiring knowledge of the significance of relationships and patterns that emerge from the process (Hoover 1988, 34-41). Theories allow scientists to "build viable models of the empirical world that can be comprehended by the human mind" (Dubin 1969, 3) and act as "framework[s] for interpreting [facts] and seeing their relationships to one

another" (Manheim and Rich 1986, 16). The theoretical framework enables scientists to "help identify reality" (Manheim and Rich 1986, 16) and guides inquiries "in comprehending the forms and functions of selected segments of the [observable] world" (Dubin 1969, 223). Modeling the complex realities emanating from the interaction of the various elements of the political communication process facilitates the empirical study of the patterns that define it. A model "is [an] abstraction of reality that is developed for presenting systematically the most important relationships in the situation which is being described" (Graham 1971, 112). The model provides scholars with a method of moving "from what we have observed in devising the theory to what we have not observed, in order to discover whether or not the theory provides us with an accurate set of expectations about the world" (Manheim and Rich 1986, 24).

In order to organize the study effectively, clarify the assumptions upon which it is based, and provide a framework within which to evaluate its results, a model of the communication of images and effects by the network news is presented in Figure 2.1. Figure 2.1 and all other figures may be found in the Appendix. This study is generally concerned with the communication of information from occurrence to social, political, and economic effects.¹ The model represents the process of transforming information from reality, actual phenomena or incidents (actors, issues, problems, and events), to

¹For a discussion of communication models for processing information, see Freedman and Freedman (1981), Bennett (1981), Lachman, Lachman, and Butterfield (1979), and Graber (1984).

the effects, immediate, intermediate, and long term. The process begins as actual phenomena or incidents (reality) transpire. The phenomenon or incident must then be deemed "newsworthy"; that is, editorial decisions must be made by the respective network organizations to determine whether the incident receives news coverage. Once news story status is decreed, decisions are made on how the phenomenon or incident will be communicated to citizens through the evening news story. This is the process by which the mass public "perceives" a reality that is mediated by the news media. The representation of actors, issues, problems, and events, as they are broadcast over time, begin to manifest a mass image of reality. Images are perceptions that persist over time. Perceptions, and the images they ultimately produce, engender varying degrees of effects on society; these effects depend on the amount of news coverage accorded an incident or phenomenon. Immediate effects are instantaneous and are influential through only one news story. The intermediate effects are the result of continued news coverage within a limited time frame from which a certain image is developed. This effect is two dimensional; as people cognitively associate perceptions into a developing image that affects their awareness of the situation, they develop an image of that situation.

Long term effects are multidimensional; they are comprised of the mass images that result from prolonged coverage of incidents or phenomena over time. This image is comprehensive and fully developed, i.e., it is the

culmination of iterated coverage of a situation in which either alternatives, courses of action, and solutions may have been explored. For example, the projection of negative perceptions of certain chemicals may have the immediate effect of increasing the mass public's concern about them. As such perceptions persist, a negative image develops that engenders opposition to their continued use. This image may well result in businesses discontinuing the chemical's use, forcing them to use an alternative. At the same time, the government may initiate an investigation into the chemical's safety and continued use, possibly resulting in additional government regulation.

This study focuses on the components of the model shown in Figure 2.2, the communication of images from occurrence, to the broadcast of the story as it appears on the television news, to the perceptions and mass images created about the actors, issues, problems, and events inherent to a situation. This analysis centers primarily on ascertaining and comparing the mass images projected over time by the three network evening newscasts about second generation environmental problems.

Research Propositions

The purpose of a model "is to generate predictions about the empirical domain it represents" in order to understand the world around us (Dubin 1969, 165). Propositions characterize a model's operation as they make "statements about the system or the values taken by [the] system" and thus, makes the theory useful by tying together different properties "relevant to a particular

inquiry" (Manheim and Rich 1986, 20). In this study, propositions are set forth to address the model's utility in explicating images of second generation environmental problems and issues; these propositions are also useful for directing the scope of inquiry to the aspect of the model this research examines.

The first proposition considers the dissemination of information about an incident or phenomenon to the public by the news broadcast.

Proposition 1: the network news mediates reality for the public.

The network news, by recounting events to the public, functions as an intermediary for information about activities that occur throughout the world; it depicts reality for people unable to experience it firsthand (Nimmo and Combs 1990, chap. 1; Ranney 1983, 22-23). Network news, thus, is interpretive and provides definitions of reality for citizens, who are "increasingly dependent on the mass media for their versions of reality" (Nimmo and Combs 1990, 25; see also Snow 1983, chap. 5). This role, in which the network news characterizes and interprets information, establishes the news story as a crucial and fundamental factor in the formation of mass images.

The second proposition addresses the relationship of the news story to its initial impression on the public.

Proposition 2: network news stories generate mass public perceptions.

As information is presented on the network evening news, the network news coverage begins to impress upon the public and creates initial perceptions of second generation environmental problems. Network news becomes an integral factor in predisposing perceptions as it "is a key influence on what pops into the viewer's mind and what does not" (Nimmo and Combs 1990, 27).

Network news begins to form perceptions through its "dramatizing and normalizing" efforts, which integrate emotion, drama, and visuals into an impressionable presentation of reality (Bennett 1988, 35-44 and 51-63; Snow 1983, chap. 5; Epstein 1973). Network news presentations, thus, impress their judgements upon the public, which affects the public's perceptions (Iyengar and Kinder 1987; Dye and Zeigler 1986, chap. 5; Weiss 1969). This proposition is especially important to this research if news coverage of second generation environmental problems is to be of consequence. This proposition must hold as it serves as the basis upon which the others build.

The third proposition relates the initial impression to the formation of an image of second generation environmental problems.

Proposition 3: continued news coverage produces mass images that increases public awareness.

Over time, as the information presented through the network evening news is communicated effectively, network news coverage will begin to generate images of environmental problems that affect the public's awareness of these problems. The third proposition brings to network news the axiom that the mass media influences what information people think about or consider by

giving them the information with which to judge what they are thinking about. Media influence, thus, assists the public in forming opinions by giving them information with which they form images based on their understanding of that information (Krosnick and Kinder 1990; Entman 1989b; Iyengar and Kinder 1987; Page, Shapiro, and Dempsey 1987). Formulating an image of reality, thus, is assisted by network news coverage, which, by continuously emphasizing certain issues, actors, problems, or events, allows citizens to personally judge the information provided them.

The first three proposition are specifically directed toward the evaluation of mass images communicated to citizens, as shown in Figure 2.2. The third proposition provides the foundation for the development of linkages among mass images of environmental problems and the implications these images pose for society; the effects of mass images are addressed in propositions four and five, respectively. These final propositions, although integral in understanding the communication of information fully, are not tested in this study. The focus of this analysis is on images -- specifically, the mass images of environmental waste problems that citizens develop based on the information presented to them by the network news.

The fourth proposition addresses the effects emanating from mass images conveyed by media coverage.

*Proposition 4: sustained news coverage refines and
 reinforces mass images and influences the
 public policy process.*

If the first few propositions hold, the mass images generated should influence how people feel about key actors, issues, events, or problems surrounding the situation. Equally, the public's perspective will influence the policy process. Media, consequently, effectuate the policy process via agenda setting or agenda definition by influencing the political climate within which public opinion is manifest (Graber 1989b, chap. 8; Kingdon 1984). Accordingly, media has an active role in the policy process from definition to evaluation and is considered a source of "readily usable, policy-relevant information" for people involved in the public policy process (Cobb and Elder 1984, 392; see also Starling 1988; Willis 1990; Linsky 1986; Linsky, et al. 1986). This proposition provides the basis for linking the mass image of second generation environmental problems to its long term effects.

The final proposition considers the potential long term effects of the mass images communicated by the network evening news' coverage of second generation incidents.

Proposition 5: prolonged news coverage refines and challenges mass images which affect overall societal, economic, and regulatory behavior.

As an "increasing proportion of people's life experiences are vicarious through the media," media occupy a crucial role in refining one reality into several versions (Starling 1990, 203; Nimmo and Combs 1990, introduction). The images conveyed by media coverage can influence lifestyles (e.g., the public's choices in consumer goods, leisure activities, and general lifestyles),

business decisions (e.g., choices concerning product development, marketing, and advertising), and public regulatory decisions.

A systematic and comprehensive assessment of the effects of the images of second generation environmental problems needs to be undertaken. Because of constraints of time and resources, however, this investigation must be limited to comprehensively measuring these images by network and speculating on likely policy effects. As such it should provide the empirical foundation upon which the more complex analysis of short and long term effects can be based. In its application of the relationships assumed in the model, this study constitutes a preliminary examination upon which more comprehensive research can be based. Since future research on their *effects* is contingent on establishing the existence of mass images, this project takes the crucial first step of empirically establishing the reality, mediation, perception, and mass images of certain environmental problems.

Basic Research Questions

Basic research questions serve as guides for the research enterprise and assist in maintaining the focus of the study. This inquiry is devoted to establishing answers to four basic research questions; answers to the first three questions allow judgement on the validity of propositions one, two, and three. Although beyond the scope of this project, the fourth research question provides for a preliminary assessment of whether mass images precipitate the intermediate and long term effects of public knowledge, public policy, and

societal, economic, and regulatory behavior. Thus, while the validity of the fourth and fifth propositions cannot be established empirically by this project, it is addressed tentatively by the fourth research question.

The four basic research questions guiding this endeavor are:

1. To what extent did the networks cover second generation environmental problems between 1975 and 1990, and what patterns emerge over time?
2. To what extent did the networks vary in their coverage of second generation environmental problems between 1975 and 1990, and what patterns emerge over time?
3. What images of second generation environmental problems emerge between 1975 and 1990, and are distinctive images produced over time?
4. What are the public knowledge, public policy, and societal, economic, and regulatory behavior implications of network news coverage of second generation environmental problems between 1975 and 1990?

The answers to the basic research questions will be sought by testing specific hypotheses that have been derived from the propositions associated with the components of the theoretical model applied in this research.

Research Hypotheses

Stories reported in the evening news can be categorized in a variety of ways. This study focuses on six aspects of news stories: (1) Volume - the number of stories about a given subject presented in the news; (2) Prominence - the relative position and emphasis of a story within the newscast;

(3) Complexity - how a story is presented technically and the amount of information it includes; (4) Perspective - the particular point of view from which a story is presented; (5) Image - the representation of reality that is mediated by stories and transmitted to audiences over time; and (6) Network - the differences exhibited among the three major networks in presenting stories over time. Volume, complexity, prominence, and perspective are the constituent parts of image and these, as it is proposed, vary significantly depending on which network forms and transmits them to the American public. The specific research hypotheses to be tested in this study are presented in Table 2.1.

The relationships among the propositions, basic research questions, and hypotheses are shown in Figure 2.3. Generally, the various groups of hypotheses address more than one basic research question and proposition. For example, at least one hypothesis from the volume, prominence, and complexity hypotheses examines the relationships set forth in the first basic research question and first proposition. As shown in Figure 2.3, hypotheses from volume, prominence, complexity and perspective generally evaluate the second basic research question and second proposition. Common among these four groups of hypotheses is their relevance to the formation of perceptions and images. While the image hypotheses (H_{5a} , H_{5b} , and H_{5c}) primarily address the third basic research question and third proposition, they provide the foundation for examining the fourth basic research question and fourth and fifth

TABLE 2.1

**HYPOTHESES FOR WASTE STORY VOLUME, PROMINENCE,
COMPLEXITY, PERSPECTIVE, IMAGE, AND NETWORK**

1. Volume

- H_{1a} Initially there will be few waste stories in network news broadcasts
- H_{1b} The number of waste stories will increase over time in network news broadcasts

2. Prominence

- H_{2a} Initial waste stories will not be prominently featured in network news broadcasts
- H_{2b} The prominence of waste stories in network news broadcasts will increase over time

3. Complexity

- H_{3a} Initial waste stories will convey relatively simple messages
- H_{3b} The message complexity of waste stories will increase over time

4. Perspective

- H_{4a} Initial complex waste stories will convey alarming messages
- H_{4b} Initial waste stories will be narrowly focused
- H_{4c} Complex waste stories will eventually convey reassuring as well as alarming messages
- H_{4d} Complex waste stories will eventually become more broadly focused

TABLE 2.1--Continued

5. Image

- H_{5a} Early waste images will be alarming
- H_{5b} Early waste images will be unidimensional
- H_{5c} Waste images over time will become multidimensional

6. Network

- H_{6a} One network will initially produce significantly more waste stories than its competitors
 - H_{6b} Differences among networks in the volume of waste stories will diminish over time
 - H_{6c} One network will initially feature waste stories more prominently than its competitors
 - H_{6d} Differences among networks in waste story prominence will diminish over time
 - H_{6e} One network will initially produce a significantly larger number of complex stories than its competitors
 - H_{6f} Differences among networks in the number of complex stories will diminish over time
 - H_{6g} Networks will maintain distinctive waste story lines over time
 - H_{6h} Networks over time will produce distinctive images of waste problems
-

propositions. The network hypotheses allow us to test, in some degree, each of the basic research questions and propositions.

It is expected that media coverage and public awareness of second generation problems was initially very low during the period under study. However, it is expected that public concern over the potential environmental degradation of second generation problems increased with the publicity attendant to several incidents during this era. In conjunction with heightened public concern for environmental protection throughout the 1980s, it is posited that media coverage of waste problems increases as the period progresses and as more waste-related incidents occur. A lag between the occurrence of triggering events, media coverage, public concern, and the appearance of waste problems on the national environmental agenda is to be expected (Kraft and Vig 1990b, 8), but eventually key incidents, such as congressional legislation and toxic, hazardous, nuclear, or solid waste emergencies or crises, pique media interest and result in more coverage of second generation environmental problems.

As the number of stories about second generation environmental incidents increase, so will the attention devoted to them. Media coverage of these incidents is expected to develop more fully and the attention given them is assumed to become more pronounced through documentaries and special news segments. Specifically, stories about second generation environmental problems increase in breadth and depth over time, as do the use of features

and editorials to discuss these types of environmental problems; and with interest in second generation problems generated, news coverage of these incidents becomes increasingly informative. The improved coverage informs with additional detail by committing additional time and more elaborate production techniques. More interviews supplemented by vivid film clips and graphics are used in an attempt to raise the level of information communicated to the public through the news story. Media, by developing their coverage in this manner, portray a certain image of second generation environmental problems to the public.

Upon developing an initial impression of second generation environmental problems, it is believed the network news coverage of these problems begins to mature. Early coverage of these incidents tends to be more definitive (specialized and detailed information is provided) and alarming (the situation is serious and you should be concerned) as the network news identifies and defines the situation. As coverage matures and moves from the initial definition and appraisal of the situation, it becomes more developed and conveys knowledgeable material²; this leads the media to begin to temper their coverage and start depicting situations as relatively less threatening--even reassuring. The news coverage, thus, begins to inform the public of proposed alternatives, selected courses of action, proposed solutions, resulting outcomes

²This is based upon the patterns found in crisis coverage (Graber 1989, chap. 9; Nimmo and Combs 1985, 9-14).

(whether it succeeds or fails), and any changes or improvements that are necessary to confront the problem successfully.

Important differences on how the networks operate are expected to affect coverage of second generation problems. It is presumed that one network takes the lead in presenting stories with a second generation environmental focus. Eventually, the other networks follow this lead and increase their coverage of these stories. Further, in promoting the principles of journalism, network coverage of waste incidents starts conforming to a general pattern over time. This pattern develops as coverage of the second generation environmental problem matures and events unfold. Originally coverage is distinctive among the networks with problems depicted in different detail and embracing the potentialities of the impending situation. Significant differences are anticipated in the perspective that networks bring to waste stories. In order to remain competitive the networks seek different story lines, emphases, and styles. Patterns for selecting incidents to receive coverage, however, eventually conform, becoming more comparable across networks, i.e., differences in what the networks choose to cover dissipate.

In summary, it is assumed that the volume, complexity, and prominence of waste stories in network news coverage eventually converges; i.e., as compared to the beginning of the period under study, all networks begin to produce waste stories that are more numerous, complex, and prominently featured in their broadcasts. Because the competitive nature of the enterprise

drives television networks to seek individual identities, however, each is expected to develop distinctive perspectives in their waste coverage. These perspectives are reflected in story lines, or fictions, that enable news producers to weave more or less coherent and dramatic narratives from otherwise fragmentary information and events. Thus, it is expected that, over time, network coverage produces distinct images of second generation environmental problems; i.e., the images of waste problems held by members of the mass public depend largely upon which network produces the evening news they consume.

DATA AND METHODS

Introduction to Content Analysis

The leading method of communications analysis, and the method used in this study, is content analysis. This method discerns messages conveyed by specific communications according to that communication's particular mode of presentation (Krippendorff 1980, chap 2; Holsti 1969a). This research seeks to analyze the messages and images communicated by the network evening news story through its basic content, contextual messages, and images.

Communication is information "exchanged between interlocutors" with the content and context of the information being transferred bearing a variety of consequences for the interlocutors, those involved in the communique (Krippendorff 1980, 44-45). While "the inferential nature of identifying the forms of ideas, values, and attitudes to which content analysis attends" are important

for communiques to be judged worthwhile empirically, they "[must] make explicit the importance of relating the classification, categorization, and frequency counts of these forms to other phenomena" (Krippendorf 1980, 23). Content analysis provides the systematic technique appropriate for evaluating the content and context of news stories. It helps understand the meanings in mass communications through systems of "trends, patterns, and differences, or combinations of all three" (Krippendorf 1980, 40) by using:

- the *frequency* with which a symbol, idea, or subject matter occurs in a stream of messages tend to be interpreted as a measure of importance, attention, or emphasis;
- the balance in numbers of *favorable and unfavorable* attributes of a symbol, idea, or subject matter [that] tends to be interpreted as a measure of the direction or bias;
- the kind of qualification made and associations expressed toward a symbol, idea, or subject matter [that] tends to be interpreted as a measure of the intensity or strength of a belief, conviction, or motivation (Krippendorf 1980, 40).

This analytical tool is useful for acquiring information about the communicator and the communication and, fully utilized, content analysis is predictive, assists in decision making, and helps in understanding reality (Krippendorf 1980, chap. 2).

Analysis of the Content of Network Evening News

This study focuses on the network news, its verbal and visual components as these are reflected in coverage of waste problems. The

interaction among the network evening news, the presenter of the story and creator of the mass image, and the mass public, the receiver of the story and interpreter of the subsequent image produced, is of utmost importance for understanding the potential effects that network evening news' images pose for the mass public.

The Vanderbilt University Television News Archive (VUTNA) provides the best available records of the network evening news programs. Analyses based on the information provided by VUTNA is an acceptable practice for acquiring a sense of understanding about the network evening news. News stories are analyzed over time, thus certain periods that may be influenced by extraneous events are controlled for by time. Also, as this analysis seeks to understand the link among incidents and coverage, external events provide additional support for, and serve to strengthen, the analysis. Therefore, situations involving environmental or human contamination by toxic or hazardous wastes, discoveries of carcinogenic qualities of toxic wastes, and congressional legislation regulating the production, transfer, storage, and disposal of chemical and nuclear wastes are noted in the analysis.

The abstracts of network news for the years 1975-1990 are examined. The VUTNA videotapes the network evening news broadcasts daily and summarizes all news stories from the three major networks in the **Television News Index and Abstracts (TNIA)**. The analysis is conducted in three phases; in phase one all stories related to waste problems are located and

identified in the TNIA. Phase two entails coding the abstracts of waste problem news stories that are located in the TNIA. Phase three involves selecting a sample of stories to be viewed, analyzed, and coded.

The extraction of waste stories, the locating of all news stories in the TNIA, comprises phase one of this research. All waste stories from 1975 through 1990 are identified. This phase of the research is crucial as it locates and identifies the population of waste stories for analysis. The population of stories serve as the base of information for the next two phases of this research.

Phase two of the research, the analysis of story content,³ evaluates the content of news coverage characteristics from stories about waste issues (Nimmo and Combs 1985, Introduction). This phase of the research permits tentative conclusions to be made based on the characteristics of news coverage and is critical because it provides information on the volume and breadth of information and the amount of coverage devoted to waste problems. The information collected from the abstracts in this phase of the research is shown in Table 2.2 for the three major networks (ABC, CBS, and NBC). This phase of the analysis evaluates the fundamental role of news in communicating waste information to the public and provides the information for addressing several hypotheses. Here the following hypotheses are tested: the amount of

³See the Nimmo and Combs (1985, 21-22) discussion of "hard" and "soft" analysis (used originally by Frank (1973)).

TABLE 2.2**VARIABLE DEFINITIONS FOR CONTENT ANALYSIS OF
HAZARDOUS AND SOLID WASTE NEWS STORIES
FROM ANALYSIS OF STORY CONTENT**

Variable Name	Variable Definitions
Page	Page number of abstract where story is located
Date	Broadcast date of news story
Network	Network broadcasting news, whether ABC, CBS, NBC
News Segment	The segment of the news in which the story appears (1 st third, 2 nd third, or 3 rd third)
Starting Time	Actual time story begins during news broadcast
Ending Time	Actual time of story ends during news broadcast
Run Time	Total elapsed time story runs during news broadcast
Story Caption	The title of the story as it appears in abstract
Waste Reference	First type of waste referenced according to importance in the news story
Waste Reference	Second type of waste referenced according to importance in the news story
Waste Reference	Third type of waste referenced according to importance in the news story
Comment	Brief description of abstracted news story
Government Source	Whether a government report is referenced in story
EPA Reference	Whether the Environmental Protection Agency is referenced in story

TABLE 2.2--Continued

Variable Name	Variable Definitions
Complexity	A rating of story complexity as presented, whether the story is complex, greater than 60 seconds, or simple, less than 60 seconds
Editorial	Whether the story is presented as an editorial or commentary
Lead	Whether the story is the evening news' lead story
Feature	Whether the story is emphasized by being a part of a series
Reporters	The number of different reporters or correspondents used in explaining the story
Locations	The number of different locations from which information about the story is presented
Region	Region of country in which the story originates
Policy	The policy or Act cited in the story
Transportation	Whether story discusses the transportation of wastes

and extent to which coverage of second generation environmental problems increased over time (Volume, H_1), the emphasis placed on coverage of these problems (Prominence, H_2), whether the presentation of these stories increased in complexity over time (Complexity, H_3), and the differences of coverage among the three network news programs (Network, H_6). Analysis of the descriptive abstracts, thus, determines whether network coverage is fundamentally comparable and, if the reporting patterns of the three networks differ, how this affects the information the public receives.

Visual Analysis of Network Evening News

Although a reasonable portrait of news coverage can be ascertained using the descriptive abstracts only, such analysis ignores the component of television news that most distinguishes it from other media -- the visual effect. Television news provides more definition and description when portraying a problem or issue as it integrates sound and motion into its visual portrayal, therefore, "television news analysis must encompass all stimuli, aural and visual, conveyed by news broadcasts" (Graber 1989a, 145). These dimensions -- sound, motion, and visuals -- contribute to the mass public's interpretation of the story. As Graber (1989a, 145) states in stressing the importance of visual analysis, "[p]urely verbal analyses not only miss[es] the information contained in the pictures and nonverbal sounds, they even fail to interpret the verbal content appropriately because that content is modified by its combination with picture messages." Thus, by viewing a sample of selected waste stories, a reasonable

estimation of the images communicated to the public via the evening news is accomplished. The information gathered from viewing specific stories appears in Table 2.3.

Phase three, the visual analysis, evaluates the image the network evening news projects to the mass public via the news story. This image is based on the visual characteristics of news stories that emerge over time. The information required for judging the patterns of coverage hypothesized is obtained from viewing the news stories and provides the information necessary to evaluate the remaining groups of hypotheses -- perspective (H_4), image (H_5), and network (H_6). This information permits the testing of: whether news coverage varies initially across the networks (Network); if there are differences in the coverage provided by each network over time (Network); the nature of the image sustained through network news coverage (Image); and finally, if well-defined and increasingly complex images of second generation environmental problems emerge over time (Perspective).

Analyzing the three networks' images determines if their overall coverage is comparable, whether the networks manifest similar images of the issues, and if, by projecting certain images to the public, the coverage provides implications for the policy process and societal, economic, and regulatory behavior. Information gathered from viewing the news stories permits an evaluation of: the news story as broadcast (the contribution of sound and

TABLE 2.3**VARIABLE DEFINITIONS FOR CONTENT ANALYSIS OF
HAZARDOUS AND SOLID WASTE NEWS STORIES
FROM ANALYSIS OF STORY CONTEXT**

Variable Name	Variable Description
Person-in-the-street	Whether "person on the street" or citizen is shown and making a statement on the situation
Citizen Activist	Whether citizen activist is shown and making a statement on the situation
Expert	Whether an "expert" is shown and making a statement on the situation
Industry Representative	Whether an industry spokesperson is shown making a statement on the situation
Environmentalists	Whether an environmentalist is shown making a statement on the situation
Environmental Spokesperson	Whether an environmental spokesperson is shown making a statement on the situation
National Official	Whether a national official is shown making a statement on the situation
National Political Figure	Whether a national political figure or former agency official is shown making a statement on the situation
Subnational Official	Whether a state or local government official is shown commenting on the situation
Subnational Political Figure	Whether a state or local government political figure or former agency official is shown commenting on the situation
EPA Official	Whether an EPA official is shown making a statement on the situation

TABLE 2.3--Continued

Variable Name	Variable Description
Sources	To whom information is attributed or credited during the story without being shown commenting on situation
Science Editor	Whether the science editor from the network reported or commented on the situation
Special Correspondent	Whether a special correspondent, someone used especially for the report, reported or commented on the situation
Balance of Presentation	Whether more than one side of the situation is reported in the story
Story Message	The intention of the message represented in story, whether the message is reassuring, alarming, or mixed (it is both reassuring and alarming) as conveyed
Drama Level of Story	The drama involved in presenting the story; whether the story's dramatic presentation has little emotional appeal [low drama: the testimonial(s) or revelation(s) concerning the situation are expressed with little or no emotion], moderate emotional appeal [medium drama: the testimonial(s) or revelation(s) concerning the situation are expressed with some emotion], or is highly emotional [high drama: the testimonial(s) or revelation(s) concerning the situation are expressed with extreme emotion]

TABLE 2.3--Continued

Variable Name	Variable Description
National Official or Agency Reference	The context of the reference concerning a national official or agency during the story's presentation, whether it is referred to as: being inactive or inattentive, being called to take action, having taken action (without specifically referencing the outcome of the action), being blamed or criticized for its actions (a negative, or potentially negative, outcome is cited, expected, or inferred), or being credited for its actions (a positive outcome is cited, expected, or inferred)
EPA Official or Agency Reference	The context of the reference concerning an EPA official or agency during the story's presentation, whether it is referred to as: being inactive or inattentive, being called to take action, having taken action (without specifically referencing the outcome of the action), being blamed or criticized for its actions (a negative, or potentially negative, outcome is cited, expected, or inferred), or being credited for its actions (a positive outcome is cited, expected, or inferred)
Subnational Official or Agency Reference	The context of the reference concerning a subnational official or agency during the story's presentation, whether it is referred to as: being inactive or inattentive, being called to take action, having taken action (without specifically referencing the outcome of the action), being blamed or criticized for its actions (a negative, or potentially negative, outcome is cited, expected, or inferred), or being credited for its actions (a positive outcome is cited, expected, or inferred)

TABLE 2.3--Continued

Variable Name	Variable Description
Industry Official or Representative Reference	The context of the reference concerning an industry official or representative during the story's presentation, whether it is referred to as: being inactive or inattentive, being called to take action, having taken action (without specifically referencing the outcome of the action), being blamed or criticized for its actions (a negative, or potentially negative, outcome is cited, expected, or inferred), or being credited for its actions (a positive outcome is cited, expected, or inferred)
Political Figure or Former Agency Member Reference	The context of the reference concerning a political figure or former agency member during the story's presentation, whether it is referred to as: being inactive or inattentive, being called to take action, having taken action (without specifically referencing the outcome of the action), being blamed or criticized for its actions (a negative, or potentially negative, outcome is cited, expected, or inferred), or being credited for its actions (a positive outcome is cited, expected, or inferred)
Graphics	The nature of the different graphics used as the story is presented, whether they are negative (evoke fear and danger), positive (evoke a confidence and safety), or neutral or mixed (they are neither negative or positive, or both); graphics are illustrations of things
Symbols	The nature of the different symbols used as the story is presented, whether they are negative (evoke fear and danger), positive (evoke confidence or safety), or neutral or mixed (are neither, or both negative and positive); symbols represent things with socially shared, readily identifiable and recognizable signs or figures

TABLE 2.3--Continued

Variable Name	Variable Description
Charts	Whether charts are used in presenting the story; charts are visual presentations of information in the form of outlines, graphs, and tables
Stills	Whether still photographs (slides, etc.,) are used in presenting the story
Film	Whether rolling film clips are used in presenting the story
Animation	Whether animations are used in presenting the story; animations are illustrations that represent motion
Visual Impact	The overall impact that the symbols, charts, stills, film clips, and animations used in presenting story; whether the presentation has a: high visual impact (visual(s) vividly convey definite meanings), medium visual impact (visual(s) convey limited, less explicitly defined, and less direct meanings), or low visual impact (visual(s) represent minimal or little meaning)

visuals to the story), how messages are communicated, and the images conveyed to the mass public through television news stories. These data allow us to evaluate the theoretical propositions associated with the model and thereby judge its utility.

Evaluating the Content and Visuals of the Network Evening News

Ascertaining the information from news stories is a three-step approach that begins with locating all stories associated with waste in the TNIA summaries, then proceeds to the analysis of story content, the analysis of the story's content based on the summary of the story provided by TNIA, and is completed with the visual analysis, the visual evaluation of the videotaped, original broadcast of the story.

Initially, the stories are located to ensure that all stories about waste problems and issues are found in the abstracts and analyzed. Stories that reference waste problems and issues are located by methodically searching each page of the TNIA. Although this procedure is more time consuming than other methods for citing relevant stories, it ensures that all stories related to the subject have a similar chance of being found and analyzed. Uncovering stories using the index of an abstract is generally the procedure of choice in network evening news research and is, in fact, appropriate for most network news research. The method used here for locating stories, however, is more suitable to the research at hand; an index search proves problematic in that the categorization of the waste changes notably over time. For example, stories of

similar content indexed as "pollution" at one time may be indexed later as "environment." An additional difficulty associated with locating relevant stories using the index is that, while the story may allude to or briefly mention waste, it may be subsumed within the context of a "larger" story and not referenced in the index.

The reliability of story identification and coding is verified by members of a research team. At least two coders must gather data for the study, a common reliability procedure in content analysis research (Krippendorf 1980, chap. 12; Holsti 1969a). The coders (research team members) used in this research are trained and experienced in content analysis.⁴ The lead coder locates and codes information from the abstracts for the entire period. A second coder independently codes three months of every year. Thus, one-quarter of the period is surveyed for verification purposes by two coders. Intercoder reliability scores are calculated from the news stories duplicated by coders.⁵ The reliability of coders is determined by comparing the stories

⁴The research team is associated with a larger project sponsored by the University of Tennessee's Energy, Environment, Resources Center (EERC) and the Waste Management Research and Education Institute (WMREI), from which this research is derived. The Science, Technology, and Media Project (STaMP) members are conducting research under the guidance of Dr. Michael R. Fitzgerald, Senior Fellow at the EERC, and Dr. Amy Snyder McCabe, Research Associate at the EERC and the Vanderbilt Institute for Public Policy Studies (VIPPS). Members of the research team include: Heather M. Fitzgerald, Steve Rechichar, Terry M. Bowen, Patra Bonham Rule, and Hunter Bacot.

⁵See Krippendorf (1980, chap. 12) and Holsti (1969b, chap. 6) for a comprehensive discussion of most of the calculations available for calculating reliability coefficients. The coefficient of reliability used here is from Holsti

identified and information coded by each researcher for each variable. For identifying and analyzing the content and visual aspect of news stories, the minimally acceptable reliability scores must equal or exceed a .80 reliability coefficient.

Upon identifying the population of waste stories, the analysis proceeds to phase two, the analysis of content from the abstracts. Each story located in the abstracts is analyzed for its content and coded accordingly based on the story's discrete and quantifiable contents as shown by the variable list in Table 2.2. This information provides insight into the presentation of waste problems and issues by the evening news and tests many of the research hypotheses.

The visual analysis of news stories involves the coding of information from the videotaped newscast stories. All of the complex stories identified in the abstracts are selected for viewing. Stories less than a minute in duration tend to consist of the news anchor reading copy and usually contain no graphic or other cues for the audience. Stories lasting a minute or more, however,

(1969b, 140); it is simply a ratio of observed agreements to the total number of judgments. As discussed by Holsti (1969b, 140), the calculation is as follows:

$$C.R. = \frac{2M}{N_1 + N_2}$$

where:

M=the number of coding decisions on which the two judges are in agreement

N₁=total number of coding decisions made by 1st coder

N₂=total number of coding decisions made by 2nd coder

often involve graphics, videotapes or films, and correspondents on location. Only complex stories are viewed because only they contain sufficient visual variety and detail to affect viewer perceptions. Given the information being communicated, complex stories are assumed to contain a reasonable amount of information in their presentation which affect citizens' perceptions and images of waste problems and issues.

Viewing concentrates on capturing the story's portrayal based on its sound, motion, and visual elements. A more definitive understanding of the presentation of waste problems and issues is provided from viewing the news story. This aspect of the research allows for the gathering of information about the way the news is broadcast, the different methods for presenting information, the overall portrayal of the story, and the perspective of the message conveyed by the story as it is reported.

CHAPTER 3

PRESENTATION AND PERCEPTIONS: THE MASS IMAGES OF WASTE ISSUES FROM AN ANALYSIS OF CONTENT OF NETWORK EVENING NEWS

INTRODUCTION

As citizens rely on the network news for information about environmental waste issues and problems, it commands tremendous potential influence on the information citizens receive about these issues and policies (see Krosnick and Kinder 1990; Iyengar and Kinder 1987; Ranney 1983, chap. 1). Through their role as the gatekeepers of information and their capacity to mediate reality, the network news controls and mediates information given to the public, providing citizens basic information with which to form "simplified visions" about issues and policies and "thereby setting the terms by which political judgments are rendered and political choices made" (Nimmo and Combs 1990, 27; Ranney 1983, chap. 1). This "acquaintance with" information is a fundamental role in the provision of news (Nimmo and Combs 1990, 49), especially for communicating the complex technical and scientific information pertaining to environmental waste issues and policies.

Understanding fundamental aspects of the communication of information by network news is ascertained through the analysis of the content of news stories. Evaluating basic characteristics of network news coverage provides an

essential understanding of the depth and breadth of information and the amount of coverage devoted to waste issues and policies. The fundamental choices about the information network news chooses to select and translate to the "public consciousness" (Bennett 1988, 14) promote basic public perceptions that citizens associate with environmental waste issues and problems and ultimately, use to judge them. With its ability to legitimate issues and policies through coverage, the news impresses information on the public through its presentation of events and, through this coverage, initiates perceptions of environmental waste issues and policies. Ultimately, by distinguishing issues and problems through iteration and duplication, the network news aids citizens in forming images of issues and problems by anchoring them to enduring symbolism and feelings with which they can be associated.¹

THE ANALYSIS OF THE CONTENT OF NETWORK EVENING NEWS

Understanding the meanings associated with the communication of information by the network news helps to identify the fundamental trends and patterns of coverage for environmental waste issues and policies. The analysis of content of news stories provides information about basic news coverage characteristics -- volume, prominence, and complexity -- that impress upon the

¹For a discussion of perceptions and images see Markus and Zajonc, 1985.

public an issue or problem's importance.² The hypotheses being addressed in the analysis of content are:

Volume

- H_{1a} Initially there will be few waste stories in network news broadcasts;
- H_{1b} The number of waste stories will increase over time in network news broadcasts;

Prominence

- H_{2a} Initial waste stories will not be prominently featured in network news broadcasts;
- H_{2b} The prominence of waste stories in network news broadcasts will increase over time;

Complexity

- H_{3a} Initial waste stories will convey relatively simple messages; and,
- H_{3b} The message complexity of waste stories will increase over time.

Network

- H_{6a} One network will initially produce significantly more waste stories than its competitors
- H_{6b} Differences among networks in the volume of waste stories will diminish over time
- H_{6c} One network will initially feature waste stories more prominently than its competitors
- H_{6d} Differences among networks in waste story prominence will diminish over time

²For a discussion of dimensions of news presentation that affect interpretation, see Entman 1989, chapters Two and Three, but especially pp. 42-43.

H_{6e} One network will initially produce a significantly larger number of complex stories than its competitors

H_{6f} Differences among networks in the number of complex stories will diminish over time

These hypotheses provide the distinct information about volume, prominence, and complexity, respectively defined as:

- the amount and extent to which coverage increased over time (volume) and is the simple frequency distribution of environmental waste stories from 1975 to 1990;
- the emphasis placed on coverage over time (prominence) is comprised of the sum of the total number of stories that appear in the first segment of a news broadcast, the number of stories presented as editorials, the number of lead stories, and the number of feature stories over the study period; and,
- the indicator for the depth of coverage over time (complex), the frequency of the stories receiving or exceeding 60 seconds of news time, and the indicator for the superficialness of coverage over time (simple), the frequency of stories receiving less than 60 seconds of news time.

Each of these characteristics of coverage are also evaluated across the three major networks.³

With the exception of one variable, government source, all of the measures gathered by the research team attained the targeted minimum intercoder agreement score of at least .80; i.e., coders agreed on the categorization of these data at least eighty percent of the time. In identifying the incidence of government source citations, the most numerous source cited, the reliability coefficient is .72; categorization matched seventy-two percent of

³These characteristics of coverage are explained in Chapter 2, Table 2.2.

the time for all coders.⁴ While less satisfactory, this level of reliability is judged sufficient to merit inclusion in the analysis.

FINDINGS

The Analysis of Content: Volume, Prominence, and Complexity

The analysis of news content determines the basic information being communicated, the fundamental coverage patterns, and the degree to which networks vary in coverage. Based on the volume, complexity, and prominence of environmental waste stories from 1975 to 1990, a suitable portrayal of what information is being transferred from network news to the public is presented. Briefly, for all networks, well over half (55 percent) of the 788 stories presented are devoted to coverage of toxic and hazardous waste issues and problems. Across networks, CBS led during the period in presenting two of three categories of environmental waste with 173 and 80 total stories about toxic and hazardous and nuclear waste respectively. ABC provided the most coverage on solid waste with 80 stories. A detailed evaluation of each characteristic for all networks and across networks follows.

Volume

As shown in Figure 3.1, the volume of environmental waste stories tends to be cyclical. News coverage of environmental waste issues and problems moves, as expected, from meager coverage in 1975 to consistently higher

⁴This variable appears as Government Source in Chapter 2, Table 2.2.

coverage by the end of the period--with dramatic ups and downs in between. In any given year coverage tends to be affected by whether or not a "triggering event" occurs. A triggering event is an unusual, dramatic, and often controversial occurrence that attracts the national media attention. The event, such as the Kepone pesticide contamination at the Allied Chemical Corporation in 1976, or the ship loaded with solid waste that could find no site willing to accept its noxious cargo in 1987, tends to attract coverage for several days. It also tends to become an "icon" that is referenced in later stories in its generic class. Major national legislation, such as the Superfund as well as putative scandals such as Love Canal and the Gorsuch-Lavelle debacle at EPA, also serve as triggering events. This type of event often generates spin-off stories spurring increased coverage of a waste class. The power of the triggering event is exemplified by the tremendous jump in waste stories in 1983 when the EPA scandal broke, as well as by the low points in coverage that tends to occur in years lacking such occurrences.

Forty-three waste stories appear in 1976 with more modest annual totals in surrounding years--11 and 25 stories in 1975 and 1976 respectively. From 1977 to 1980, waste stories increase steadily to a high of 75 stories, but drop precipitously in 1981 to 28 stories only to increase again to a study period high of 111 stories in 1983.⁵ Following the high of 111 in 1983, coverage plummets

⁵The 1983 coverage is inconsistent with the coverage throughout the study period and may be regarded as atypical in many instances. This is not to diminish its importance to the analysis as such coverage provides insight into

to 42 stories in 1984 and reaches a post-1983 low of 31 stories in 1985. The trend reverses in 1986, however, when coverage climbs to 48 stories at which point coverage increases and remains consistently between 45 and 65 stories annually.

Immediately recognizable from Figure 3.1 is the atypical coverage extended environmental waste issues and problems in 1983; this anomaly is attributable to the coverage of the EPA scandal involving allegations of favoritism being extended by EPA administrators to producers of toxic and hazardous waste materials. Beyond this exception, ten of sixteen years of coverage are within or near the 40 to 60 stories range with one year exceeding this range and four years falling short of it. The basic pattern is apparent--the evening news increased its coverage of environmental waste issues. Annual variation notwithstanding, when four year averages for the entire period are calculated, the increased emphasis on waste problems becomes clear. As shown in Table 3.1, in the initial four years (1975-1978) the average number of waste stories is 30. This average grew to 50 in the second quarter of the period (1979-1982), and to 58 in the third (1983-1986). The average number of stories for the last quarter (1987-90) was essentially unchanged at 59, but nonetheless virtually doubles the starting average.

the motivation of network news organizations in their provision of information.

TABLE 3.1

**VOLUME, PROMINENCE, AND COMPLEXITY OF WASTE STORIES
IN FOUR YEAR INCREMENTS**

Years	Volume		Prominence		Complex	
	N	Mean	N	Mean	N	Mean
1975-78	118	30	30	7.5	72	18
1979-82	201	50	43	10.8	133	33
1983-86	232	58	96	24.0	142	36
1987-90	237	59	86	21.5	190	48

Prominence

The prominence of network news coverage of environmental waste issues is remarkably steady in comparison to the coverage of volume and complexity. As shown in Figure 3.1, except for the stories receiving coverage in 1983, the prominence of coverage varies little; in the aggregate, however, there is an overall increase during the study period. Similar to the pattern of coverage observed for volume, the prominence of coverage drops to exceptional lows in 1975 (0), 1981 (4), and 1985 (5). Noting these exceptions, the prominence of coverage ranges from nine (9) stories to sixteen (16) stories from 1977 to 1985. From 1986 to 1990, however, the nature of prominent coverage changes dramatically as prominent stories approach or exceed 20 stories annually emulating the pattern displayed by the volume of coverage. The growing network emphasis on waste problems is the more apparent when averages are taken into account. As shown in Table 3.1, the average

prominence score for each four year segment roughly triples from 7.5 initially to 21.5 at the end. Thus, not only were there more waste stories, they were being featured more prominently in the broadcasts over time.

Complexity

The complexity of network news coverage of environmental waste issues and problems reinforces the patterns apparent in volume and prominence of coverage. Figure 3.2 shows that the complexity of the coverage of environmental waste stories, like the volume of coverage, is basically cyclical with an overall trend toward significant increase. Exclusive of the study period anomaly, 1983, complex coverage moves from relatively few complex stories in 1975 to a substantial number of complex stories in 1980, a pattern that is basically repeated from 1985 to 1990; complex coverage during these periods for example totaled four (4) stories in 1975 only to increase to 52 stories by 1980 and, similar to the 1975 to 1980 period, there are only ten (10) total complex stories in 1985 while in 1990 there are 56 stories. The comparison of four year segment averages provided in Table 3.1, however, strikingly shows an increase in the depth of coverage devoted to waste issues over time. The average number of complex stories almost doubled between the first and second four year segments; by the final quarter of the sixteen years studied this average had risen to twice that of the initial segment. Over time the networks produced more waste stories, placed them in more prominent positions within broadcasts, and spent more time and resources on each story.

Comparatively, simple coverage approximates complex coverage eight times in twelve years prior to 1987⁶; thus, in only four of the first twelve years do the networks produce complex stories at significantly greater frequencies than simple stories. In 1987, however, as the number of complex stories increased rapidly, the number of simple stories start to decline and eventually reach levels reminiscent of the mid-1970s.

Particularly interesting is that during the study period an average of 64 percent of environmental waste stories receive complex coverage. Specifically, from 1988 to 1990, 81 to 91 percent of the total number of stories reported are complex. Exclusive of 1983 and similar to the patterns displayed by volume of coverage, nine of the sixteen years see the number of complex stories produced within or near the 20 to 40 story range. Similar patterns to volume of coverage are observable here as well, from 1977 to 1980 and 1985 to 1990 there is a noticeable gain in the complexity of coverage given environmental waste issues.

Volume, Prominence, and Complexity By Network

The most revealing distinctions among the three networks involve the post 1985 era of coverage. During this period, ABC emerges as the leader in all three characteristics of network news coverage. Excepting the atypical coverage devoted to the EPA/Gorsuch & Lavelle situation in 1983, CBS proves

⁶Approximate, as used here, refers to instances when frequencies of complex and simple coverage are within approximately 10 stories of each other.

more attentive to environmental waste issues for the first ten years of the study period; CBS provides a greater volume of stories and more complex stories than either of the other networks. During this same ten year span, no network emerges as a leader in the provision of prominent coverage of environmental waste issues and problems.

As shown in Figures 3.3 through 3.5, ABC establishes itself as the recent network leader in each area of analysis. Since 1986, ABC has provided a greater volume of coverage with more depth (complexity) and emphasis (prominence) than the other networks. Recent coverage of environmental waste issues and problems since 1986 shows that ABC consistently presents greater than 20 stories annually, offers more than 15 stories annually that exceed 60 seconds in length (complexity), and, since 1987, assigns significantly more importance to environmental waste coverage by featuring these stories prominently nearly 15 times each year.

During the first two-thirds of the study period, from 1975 to 1985, CBS commands the coverage on environmental waste issues. During this ten year period, CBS committed itself to a tremendous number of stories and significant amounts of time relative to the other networks. For example, the volume and complexity of stories is dominated by CBS during this period. The volume of stories exceeds 15 stories annually nine of the eleven years for CBS as compared to six of the eleven years for ABC and NBC **combined**; similarly, the complexity of the stories presented annually by CBS equals or exceeds ten

stories eight times in eleven years while ABC and NBC total three stories **each** during the same period.

Although consistently last throughout the study period, NBC does emerge a leader in environmental waste coverage in 1983, a year dominated primarily by the EPA/Gorsuch & Lavelle situation, when it leads the other networks in volume and complexity and nearly leads in the prominence of coverage. Beyond 1983, NBC fails to offer much to the coverage of environmental waste issues and problems.

Evaluation of the Hypotheses for the Analysis of Content

The analysis of content of the information presented by the three major networks offers evidence that fundamental trends, patterns, and differences in volume, complexity, and prominence of news coverage do exist among them. First, the hypotheses concerning volume project that initially, among all networks, there would be few waste stories (volume hypothesis H_{1a}) and that this number would increase over time (volume hypothesis H_{1b}). Initially, as Figure 3.1 shows, there are fewer environmental waste stories reported by all networks, yet this pattern fails to persist throughout the study period, which ultimately offers a more cyclical pattern. While the first hypothesis is supported, the second hypothesis develops as anticipated but not quite as fully as originally envisioned due to the inconsistent coverage from 1981 to 1985; regardless, this hypothesis holds as proposed as the post-1985 study period

exhibits a trend of increasing coverage for ABC and CBS that ultimately yields an aggregate increase in the volume of stories over time.

The second set of hypotheses, prominence hypotheses H_{2a} and H_{2b} , concern the prominence of coverage provided environmental waste issues and problems by all networks. It is hypothesized that initial environmental waste coverage would not receive prominent coverage (prominence hypothesis H_{2a}) and that the prominence of these issues and problems would increase over the study period (prominence hypothesis H_{2b}). Both hypotheses ensue as anticipated; prominent coverage commences in 1975 with no prominent (0) stories and, despite the aberrant coverage provided in 1983, maintains on average nearly fourteen (14) stories per year through 1985 and begins to increase thereafter, averaging 21 stories annually. Thus, prominent coverage is initially meager and increases over time as predicted.

The third set of hypotheses analyzed postulate that, first, waste stories are initially presented through simple messages (complex hypothesis H_{3a}) and, second, that these messages will increase in complexity over time (complex hypothesis H_{3b}) for all networks. As shown in Figure 3.2, the first of these hypotheses is refuted; the frequency of complex stories is relatively cyclical. The second hypothesis, however, is substantiated; complex stories, relative to simple stories, ultimately increase in absolute frequency from 1975 to 1990 as expected.

The last set of hypotheses tested, network hypotheses H_{6a} - H_{6f} , compare the differences in trends and patterns for volume, prominence, and complexity over time across all networks. The first two hypotheses consider volume among networks (volume hypotheses H_{6a} and H_{6b}); it is hypothesized that initially one network would produce significantly more waste stories than the other networks and that these differences would diminish over time, network hypotheses H_{6a} and H_{6b} respectively. Although CBS consistently dominates early coverage of waste issues, it fails to produce significantly more waste stories than either ABC or NBC, as demonstrated in Figure 3.3; thus, the presumed pattern that one network would dominate coverage provided waste issues is not supported. The second network hypothesis (H_{6b}), which deals with the diminishing differences in volume of coverage over time, is discredited also; the differences among the networks are basically cyclical during a majority of the study period until 1987 at which point ABC begins to provide substantially more coverage than NBC and, except for 1990, CBS. In essence, the relationships develop in relative contrast to those hypothesized.

The prominence hypotheses (network hypotheses H_{6c} and H_{6d}) examine whether one network features waste stories more prominently than the other networks during the early years of the study period (H_{6c}) and if this discrepancy among networks declines over time (H_{6d}). Initially, as shown in Figure 3.4, no network emerges to consistently feature environmental waste stories more prominently than either of its competitors, thereby refuting the anticipated

pattern of coverage among networks. Concerning the second prominence hypothesis (network hypotheses H_{6d}), the differences among networks do not diminish over time, but increase, thoroughly contradicting the predicted pattern of coverage. In fact, as with the pattern exhibited with the volume of coverage among the networks, these hypotheses prove to directly contradict the expected relationships.

The final pair of hypotheses (network hypotheses H_{6e} and H_{6f}) inquire as to the complexity of the coverage of environmental waste issues across networks over time. The first of these two hypotheses (network hypotheses H_{6e}) proposes that one network will significantly outdistance its competitors in the number of complex stories presented on waste issues. The second hypothesis of this pair (network hypothesis H_{6f}) presumes that, upon attesting to one network providing more coverage initially, the margin of complex coverage among networks will degenerate over time until there is virtually no difference in the complex coverage of waste issues across networks. As shown in Figure 3.5, neither hypothesis is supported. Except for the final three years of the study period, 1987 through 1990, the networks' complex coverage practically converge. In fact, in half of the first 12 years of the study period the networks cluster together⁷ and rarely does one of the three networks produce a significantly larger number of complex stories than its competitors. Finally, from

⁷Clustering, as used here, refers to instances when the annual frequencies for each network are not separated by more than 5 stories.

1987 to 1990, ABC and NBC veer in completely opposite directions while CBS begins to approach ABC's significantly increased complex coverage of environmental waste issues.

DISCUSSION AND CONCLUSIONS

Understanding the trends and patterns of network news coverage for and across the networks provides practical information for assessing coverage of second generation environmental issues and problems. The analysis of the content of news stories contributes substantial fundamental information about news coverage characteristics that aid in evaluating how the coverage of second generation environmental issues and problems have progressed and changed over time.

As discussed and shown in Figures 3.1 through 3.5, the coverage of second generation environmental issues and problems, in general, prove more cyclical than continuous throughout the study period. The cyclical nature of coverage is apparent across two of the three fundamental characteristics -- volume and complexity -- while prominence displays relative consistency over time; specific periods -- the initial period of escalation from 1975 to 1980; the following four year period of decline and inconsistency from 1981 to 1984; and, the rise in coverage during the final third of the study period from 1985 to 1990 -- are particularly conspicuous during the study period.

The increases in coverage center around certain issues and problems evident in coverage as indicated on Figure 3.1. The rises in coverage align themselves with incidents that command environmentally-oriented news coverage. Most pronounced is the coverage extended the EPA in 1983, which involved allegations of misconduct among top agency officials with regard to the management of hazardous and toxic waste disposal.

Other incidents gaining notoriety through network news coverage are the discovery of improper disposal and handling of toxic and hazardous wastes. In 1975, the Allied Chemical Corporation failed to properly store Kepone, a proven carcinogen, which eventually contaminated workers, nearby grounds, and the James River in Virginia; similarly, in 1986, the W.R. Grace Company incurred severe civil and criminal penalties when an illegal waste dump, for which they were responsible, was discovered leaking and eventually contaminated people and nearby grounds in Massachusetts.

Associated with these incidents are federal legislative activities that evidently may have been provoked by such pronounced incidents; for example, the infamous Love Canal, New York situation (discussed in Chapter 1) received substantial coverage in 1979 and 1980 while the Superfund legislation (the Comprehensive Environmental Response, Compensation, and Liability Act of 1980), passed by Congress in 1980, began to capture considerable coverage. Similarly, a comparable situation emerged as Congress considered the Superfund Amendments and Reauthorization Act of 1986 (SARA) while the

W.R. Grace Company's waste disposal problems were being recounted via the network news; both issues garnered considerable coverage in 1986.

Events also dominated second generation environmental coverage from 1987 to 1990. In 1987, the nation was enthralled with the "garbage barge," a barge with a cargo of municipal solid waste needing disposal was not allowed to dock at various ports along the east coast; the networks were enamored with the story about a shipment of waste as it journeyed the eastern seaboard unable to unload its cargo. The story ultimately captured the attention of the American public, who followed the odyssey via the news as if it were an epic adventure.

Similar to 1987, the topic that dominated coverage in 1988 concerned hazardous wastes (mostly medical) washing ashore on northeastern United States beaches after being disposed of at sea. Also, as 1988 was a presidential election year, particular attention was focused on the environmental status of the northeastern United States, the home region of the Democratic nominee, Massachusetts Governor Michael Dukakis, who emphasized the environment in his campaign. Governor Dukakis stressed the environmental record of his home state only to be attacked by his Republican opponent, Vice-President George Bush, on the vile conditions that existed in Dukakis' state, namely the poor condition of Boston Harbor. The discovery of medical and other solid wastes washing ashore on New England beaches in concert with the emergence of the environmental issue in the election yielded a tremendous

amount of coverage on environmental waste issues. In fact, news coverage improved as the situation worsened to the point that several beaches in the region were closed as the unsanitary conditions posed public health threats to citizens. The combination of presidential politics and the sensational nature of news pertaining to sea-disposed wastes washing up on United States beaches kept the issue in the news and thus, highly salient throughout the year.

In 1990, a new decade was ushered in with the 20th anniversary of Earth Day, April 22, which directed attention to environmental issues, in general, and provided increased opportunities for coverage of environmental waste issues and problems, specifically. Earth Day provided network news with a unique opportunity to focus coverage on the problems associated with waste disposal in the United States.

From the analysis of network news coverage during this period, which is generously preoccupied by second generation environmental problems, it is obvious that environmental waste issues garnered considerable attention. There are, however, some notable intervals in the patterns and trends of coverage afforded environmental issues over time and in the variation of coverage characteristics observed across networks; these intervals and variations include:

- the tremendous attention devoted to the EPA/Gorsuch & Lavelle situation, which incidently involved the primary characteristics of "good" newsmaking -- scandal, conflict, controversy, and drama;
- the consistently increasing attention granted environmental waste issues in recent years;

- the dramatic increase in complex coverage vis a vis simple coverage of environmental waste issues since 1986; and,
- the relative similarity displayed in coverage characteristics across networks until the pronounced break displayed by ABC since approximately 1986.

Thus, with these exceptions noted, the cyclical pattern of network news coverage for volume and complexity are evident over time, while the prominence of coverage for all networks is somewhat consistent with a slight increase noticeable in the final three years of coverage. With the exception of some annual variation in the frequencies by network per characteristic and the recognizable boost of ABC to the forefront of environmental coverage in the latter stage of the study period, the patterns for volume and complexity across networks emulate the general patterns observed in the aggregate, while the pattern observed for prominence is only somewhat similar.

The general questions about basic information -- how much coverage is shown and how detailed and pronounced that coverage is -- are answered from an analysis of content of the network news. Important information concerning the point of view and the representation of the information conveyed by network coverage permits a more extensive evaluation of what message or story line is being developed, who, and how credible, is the messenger, and what is being shown in conjunction with the report. These queries must be ascertained to fully judge the information portrayed by network news; such factors must also be addressed if a complete understanding of how the network news affects environmental waste images is to be investigated completely.

CHAPTER 4

PRESENTATION AND PERCEPTIONS: THE MASS IMAGES OF WASTE ISSUES FROM A VISUAL ANALYSIS OF NETWORK EVENING NEWS

INTRODUCTION

The distinguishing feature of the network evening news in communicating information to the public is its visual dimension. Visuals complement and supplement the information communicated to citizens by modifying the information presented "with picture messages" (Graber 1989a, 145). Visual messages allow citizens to become acquainted with information firsthand. Through visuals, communicated in conjunction with other information, people are able to associate information symbolically and interpret it (the information) solely on its presentation; given the capacity of the network news to impress its perceptions and judgments of issues and events on the public through visual portrayals (Krosnick and Kinder 1990; Dye and Zeigler 1986, chap 5; Weiss 1969), the news experiences tremendous influence through the perspectives granted various issues, events, actors, and problems.

Network news portrayals complement information with sound, motion, and visuals that citizens can use to distinguish the importance associated with certain issues and problems and impresses information upon citizens, which assist them in forming images of issues and problems. The visual qualities of

the network evening news endow it with extraordinary advantages over other media by enabling it to "convey emotions as well as information" (Dye 1992, 337). Joined with the fundamental network choices discussed in Chapter Three, visual presentations -- choice of sources, references, graphics, film clips, etc. -- capture citizens' attention with emotion, permitting their instantaneous involvement with the situation as it transpires. Emotional involvement is especially crucial for second generation environmental issues and policies, for which citizens rarely have direct experiences or are generally unfamiliar with, as citizens tend to accept presentations offered by the network news as their meaning (Iyengar, Peters, and Kinder 1982, 854). In fact, on issues that citizens possess little or no familiarity, initial impressions tend to serve as a proxy by which subsequent information is measured and processed (Lodge, McGraw, and Stroh 1989, 401-402, 416).¹ Moreover, the repetitious nature of coverage over time reinforces and perpetuates the news' images of second generation environmental issues and potentially "alters the foundations of public opinion" (Krosnick and Kinder 1990, 500) for such issues and events. Thus, the public's interpretation of the information conveyed visually proves crucial in establishing meanings and images of second generation environmental issues.

¹Much of the research in this area concerns candidate evaluation; for example see, Zaller 1991; Conover and Feldman 1984; Price 1984.

THE VISUAL ANALYSIS OF NETWORK EVENING NEWS

Having ascertained the fundamental characteristics of news portrayals of environmental waste issues through an analysis of content in Chapter Three, it is imperative to understand how these characteristics are enhanced through visual representation. In accommodating impressions made from initial perceptions (formed from fundamental characteristics of news coverage in general), the visual analysis furthers the understanding of how information communicated by the network news informs and influences the formation of images of environmental waste issues. The pertinent information required for understanding image formation -- perspective, image, and network -- concern those aspects of communication that impress upon the public with sound, motion, and visuals, thereby providing citizens with more definitive information to evaluate environmental waste issues. The hypotheses that permit the evaluation of the images being conveyed via the network news are:

Perspective

- H_{4a} Initial complex waste stories will convey alarming messages
- H_{4b} Initial waste stories will be narrowly focused
- H_{4c} Complex waste stories will eventually convey reassuring as well as alarming messages
- H_{4d} Complex waste stories will eventually become more broadly focused

Image

- H_{5a} Early waste images will be alarming

H_{5b} Early waste images will be unidimensional

H_{5c} Waste images over time will become multidimensional

Network

H_{6g} Networks will maintain distinctive waste story lines over time

H_{6h} Networks over time will produce distinctive images of waste problems

These hypotheses provide distinct information about perspective, image, and network, respectively, and are defined as:

- the changing nature of portrayal by network news, from alarming (arousing fear with frightening images) to reassuring (restoring confidence with consoling images), and whether information presented is narrowly or broadly focused (the variation among the different types of people who appear in the story or act as information sources for environmental waste issues);
- whether the information presented is unidimensional or multidimensional (the variation in the number of people who appear or act as information sources and their respective characterizations) and includes the changing nature of portrayal, from alarming to reassuring as well; and,
- the distinctive story lines evoked from each network (each network's general approach to environmental waste coverage), i.e., whether distinctions are apparent among networks according to how each frames their stories (who appears, from whom their information derives, their respective characterizations of agencies or industry, and their distinctive uses of visuals).

The information from the visual analysis is presented in simple frequency distributions according to the assessments of independent coders viewing each news story. In the visual analysis, all variables fall within the established

reliability score range, achieving at least a .80 reliability score.² The visual analysis is of complex stories only (those stories exceeding 60 seconds in length) and consists of an analysis of four years of the study period, 1975, 1980, 1985, and 1990. These four years are well suited for visual analysis as they are representative of the cyclical nature of coverage observed in the analysis of content. The visual analysis ensues with 1975, a year that receives little coverage (N=4); it is the origin of the study period and beginning of the first cycle observed in the analysis of content. The next year of coverage, 1980, contains a number of complex stories (N=51) and acts as the crest of the first cycle of news coverage. In 1985 the second cycle of coverage begins. The final year of the study period, 1990, represents the apex of the second cycle of coverage (N=53) and concludes the analysis.

To clarify the visual analysis the findings regarding similar variables are categorized as appearances, sources, and references. When, for example, "appearances" are mentioned we are referring to information concerning the various individuals shown and commenting on the situation in the news story -- man-in-the-street, citizen activists, experts, industry representatives, environmentalists, environmental spokespersons, national officials, national political figures, subnational officials, subnational political figures, and EPA officials. Appearances are further subdivided according to their government or

²Because of the extraordinary number of variables analyzed (51 variables) in the visual analysis, reliability scores for this analysis were calculated on every other year of the period under study (1975 and 1985).

nongovernment classification and are officials or people affiliated, or not affiliated with government respectively. Thus, when the discussion refers to appearances by government officials it speaks of national officials, national political figures, subnational officials, subnational political officials, and EPA officials collectively.

When "sources" are mentioned, the discussion concerns those people or agencies that provide information about waste issues without being shown, but only mentioned as sources; potential sources include: government official or agency, government report or study, nongovernment report or study, experts, industry, community activists, citizens, environmentalists, and others. Due to insufficient frequencies of use (less than 13 total mentions during the period investigated), however, only six of the sources are included in the analysis. Those sources used include: government official or agency, government report or study, experts, industry, citizens, and environmentalist; thus, these six sources collectively constitute the reference to "sources" in the analysis.

Information concerning the context in which people, government agencies, and industry are mentioned in the course of a report are referenced together as "references;" included in this group are: national official or agency references, EPA official references, subnational official or agency references, industry references, and political figure or former agency member references.³

³All variables from each group are defined individually in Chapter 2, Table 2.3.

FINDINGS

The visual analysis of network news complements the analysis of content by supporting the trends, patterns, and comparability of coverage with characterizations of that coverage based on, borrowing from Nimmo and Combs (1985, 18-19 and 195-198), their "rhetorical visions," i.e., the networks' distinctive approaches for characterizing, constructing, and reporting, in this case, environmental waste issues and events. Such information is grounded in the "value-oriented interpretations [by the network news] of the rhetorical situation" (Nimmo and Combs 1985, 196), which provides citizens with tangible symbols that act as anchors for which images associated with environmental waste issues and events can be attached. In fact, coverage of environmental waste issues and events is laden with distinct changes in perspectives and images. For example, over time, dramatic-emotional portrayals of environmental waste issues experience a reduction, and a similar change is noticeable in the visual impact of coverage as portrayals become less vivid over time. Moreover, as shown in Figure 4.1, there is a noticeable change in the networks' citing of government and nongovernment appearances, sources, and references combined. Over time, there is dramatically less reliance or use of government appearances, sources, and references; in fact, by 1990, the networks are citing nongovernment appearances, sources, and references nearly half as much as government citations. Ultimately, the visual analysis of the network evening news greatly enhances the understanding of the

information communicated by including visual characteristics that affect citizens' overall knowledge of environmental waste issues and events, which consequently aid them in judging the information presented and constructing images of these issues and events.

The Visual Analysis: Perspective and Image

Initial perspectives of network news coverage of environmental waste stories are discerned by evaluating the type of people who appear in and comment on the situation as well as knowing who or what serve as information sources for networks, i.e., those people or reports/analyses that help explain the information about environmental waste stories. As evidenced in Figure 4.2, among the nongovernment persons appearing and commenting on the situation in news stories, there is an increasing reliance on industry representatives over time; there is also a noticeable rise in the use of experts. Conversely, the man-in-the-street, although dominant initially, and the activist, while not dominant but enjoying significant use, decline in use over time.⁴ Somewhat surprising is the less than optimal use of environmentalists and environmental spokespersons to comment on waste issues or events over time. In addition, the use of nongovernment officials to provide information becomes more diversified over time as information is ascertained from each different

⁴In this discussion of the visual analysis, the variables are analyzed based on the frequency of occurrence; thus, caution is warranted when making comparisons across variables as the **frequency of occurrence** (of the different aspects of the visual analysis) varies from variable to variable.

nongovernment person more than once in 1990; although all six categories of nongovernment persons are used in 1980 and five of six are used in 1985, their relative use compared to the number of appearances made is negligible when contrasted to the use of these persons in 1990.

Appearances of government officials are dominated by national officials with an obvious increase noticeable in the use of subnational officials over time. Figure 4.3 displays two particularly conspicuous findings: (1) the decline of EPA officials commenting on environmental waste situations and (2) the apparent token use of political officials at both the national and subnational levels. As public officials are likely to be integrally involved with and highly knowledgeable of environmental issues, especially waste issues, it is surprising that EPA officials and national and subnational officials do not contribute more to the dissemination of environmental waste information via news coverage than they are shown to have contributed. The increase in the number of appearances by subnational officials over time is indicative of the networks' reliance on government officials from levels of government other than the national level; this is equally evident in the explicit decline in the number of appearances made by EPA officials and the marginal decline in the use of national government officials. The shift away from government officials to nongovernment persons appearing on the network news is evidenced in Figure 4.4, which shows that the use of appearances by nongovernment persons exceeds that of government officials by 1990.

Another important facet of the communication of information about waste issues and events to citizens is the number and type of sources of information used in the news story.⁵ Government officials dominate the sources of information, but there is a decline in their utilization over time as the sources of information become more diversified, as shown in Figure 4.5. Other significant increases in the provision of information in news stories over time are witnessed by the growing use of industry representatives and experts (i.e., those individuals explicitly or implicitly presented as having special knowledge or competence about the subject or events being covered). As government officials serving as sources of information declines over time, other sources, namely industry and experts, gain access to the public via the network. Relative to the increased diversity in sources used, there is a more equitable distribution among all sources for all networks over time. Over time it becomes apparent that the networks are more successful at including a range of sources in substantial proportions to the number of sources used. Similar to the pattern demonstrated in Figure 4.4, Figure 4.6 shows that there is a substantial gain in the use of nongovernment sources vis a vis government sources over time.

The visual characteristics used by networks to communicate information clarify the coverage perspective and image further when evaluated according to the assistance contributed by the dramatization of the story, which includes the

⁵Insufficient frequencies (less than 13) led to the omission of the nongovernment report or study and community activists variable from the analysis.

addition of emotive appeals; such appeals are made through various visual characteristics -- story message, drama level, visuals (charts, still photographs, film clips, and animation), graphics, symbols, and visual impact -- and assist citizens in evaluating the information presented with their respective sound, motion, and visual supplications to the news story.

Figure 4.7 displays the changing nature of the story message of all networks over time; although initially predominantly alarming, coverage becomes increasingly mixed over time. More noticeable is the influx of reassuring messages, which, until the final year of the study period, are basically nonexistent. The drama level of coverage follows a similar pattern; as seen in Figure 4.8, the drama levels move from a preponderance of high and medium level coverage, i.e., they contain considerable emotional appeal in 1975 and 1980, to the final two years under study, 1985 and 1990, during which a majority of coverage is of the low level variety, i.e., contains little or no emotional appeal. The coverage over time, thus, becomes less dramatic and more mixed.

The primary method of augmenting the communication of information visually during the study period is through film clips depicting scenes of the situation or of situations very similar to it. Other visual aids include the use of graphics and symbols, which incur distinct uses over time. Graphics, as shown in Figure 4.9, are basically neutral or mixed; however, there is a decline in the use of negative graphics over time. Contrary to the use of graphics, the use of

symbols displays a propensity toward more negative representations. As shown in Figure 4.10, the use of negative symbols maintains a significant majority of use over time. The overall visual impact -- the vividness of meaning represented -- is, however, amazingly low by the end of the study period; in essence, as Figure 4.11 shows, the visual impact is transformed from an initially predominantly high and medium visual impact to its current low visual impact.

The Visual Analysis: Network

Discerning the distinctive story lines and images across networks is established by evaluating each network for their respective visual characteristics and their development of definite story lines -- the recurring perspective of each network that is evidenced through continued coverage of environmental waste issues or events. The story line offered is based on a network's repeated frames of reference or comments that become synonymous with that network's representation of environmental waste stories, i.e., their respective efforts at establishing a "common thread" or their distinctive summary approach for simplifying or clarifying environmental waste issues or events for citizens. Story lines establish reference points about environmental issues and events for citizens, which make it easier for them to evaluate these stories with limited effort; for example, in representing stories about Love Canal, one particular network continually made reference to the situation as a "toxic time bomb," a term that ultimately became synonymous with Love Canal, giving citizens a

symbolic anchoring point with which to reference the Love Canal situation in particular, and environmental waste issues or events generally.

ABC

Over time, ABC displayed a more equitable use of government and nongovernment appearances than the other networks; yet, the network moved from a reliance on appearances by government officials at the national level to an increased use of state officials and political figures, as shown in Figure 4.12. ABC did, however, have a slightly higher frequency of use of nongovernment persons (environmentalists, industry representatives, and experts) during this period, indicating that they were shifting their supporting statements about waste information from government officials to nongovernment persons, as indicated in Figure 4.13. Although the use of government officials as sources of information predominates during this period, the use of sources by ABC follows patterns similar to those evidenced with appearances, i.e., there is an increased use of experts and industry representatives vis a vis government officials. As in the aggregate, the use of nongovernment appearances by ABC changes over time to finally exceed the use of government appearances, as shown in Figure 4.14.

The message, drama, and visual efforts of ABC are similar to those witnessed in coverage by all networks; as shown in Figures 4.15 and 4.16, ABC, over time, began to soften its message and drama levels as these aspects of coverage changed from predominantly alarming messages and

medium and high level dramatic portrayals to predominantly mixed messages and low level dramatic portrayals. ABC's use of visuals supports this finding. ABC began to use many more neutral or mixed graphics and symbols over time; however, despite a gain in the use of negative symbols vis a vis neutral symbols, negative symbols remain predominant over time. A similar pattern is also apparent in the visual impact of ABC's coverage, which becomes dominated by low impact stories (visuals that evoke little meaning) after years of domination by medium and high impact stories combined.

Consequently, the story line of ABC is reflected in this changing emphasis of coverage. The network initially portrayed the environmental waste issue as one of impending doom for society, repeatedly calling attention to the disastrous potential of the problem. This is evidenced by its early references to government officials and industry as culpable, as shown in Figures 4.17 through 4.20. This early criticism eventually becomes redirected by 1990 to center primarily on blaming or criticizing national government officials, while casting industry and EPA officials as taking action or moving in the right direction on the situation.

Such references are commensurate with the general story line developed by ABC that emphasizes the inability of the federal government to cope with this enormous problem that threatens everyone; concomitant with these changes is ABC's move to incorporate expert commentary and industrial perspectives (through appearances) about the possible remedies to this

dangerous situation. By the end of the study period, ABC is blaming the federal government for problems associated with environmental waste, and implies that society, as the innocent victim, must act on its own volition to change government's perspective and force corrective action. Finally, the portrayal of the situation as disastrous or as impending doom is revealed by ABC's constant use of the skull-and-crossbones poison symbol to introduce environmental waste stories, especially during the 1980 coverage concentrating on Love Canal or other comparable situations, a more than lucid commentary on the disposition of its coverage: the permeable poison that cannot be confronted successfully by those in charge, namely the federal government.

CBS

CBS generally uses a greater frequency of appearances to comment on environmental waste issues and events. As shown in Figures 4.21 and 4.22, relative to appearances by government officials, CBS relies heavily on national and subnational officials, while over time its nongovernmental appearances come to be dominated by the man-in-the-street, environmental spokespersons, and industry representatives. However, when compared over time CBS, like ABC, tends to emphasize its use of nongovernment appearances relative to government appearances, which is shown in Figure 4.23. Unlike ABC, CBS relies heavily on government officials and government reports to supplement appearances as displayed in Figure 4.24; thus, while not being shown during

the news broadcast, government officials and reports comprise a noteworthy portion of the information CBS conveys to the public.

The message, drama, and visual efforts of CBS are different from those shown to exist for all networks. CBS, while increasing its number of low level drama stories, maintains a conspicuously alarming message throughout the study period as shown in Figure 4.25; likewise, the use of symbols by CBS is negative throughout the study period, as demonstrated in Figure 4.26. CBS displays a fairly constant use of neutral or mixed graphics over time. Following a similar trend is the visual impact of environmental waste stories presented by CBS; over time CBS's visual impact is dominated by low impact stories, but there is growth in the number of medium impact stories presented, meaning that the stories are conveying a limited, less definite message about environmental waste issues and events.

While it demonstrates a significant use of government officials and reports as sources of information about environmental waste issues, CBS blames or criticizes the national government more than any other of the references evaluated; yet, in stark contrast, EPA officials realize more citations for action or activities taken over time. Figure 4.27 shows the propensity of criticism national officials receive, while Figure 4.28 shows the shift in EPA references over time. Although CBS cites the actions of all references at sufficient frequency, of the remaining references only industry receives proportionate criticism remotely comparable to that received by government

officials. Such coverage, where references denigrate the efforts of the national government, provides a sufficient basis for understanding CBS's overall story line.

While continually emphasizing the citizen as victim (similar to ABC), CBS's distinguishing story line is its criticism of government for not having taken action to resolve this burgeoning problem. CBS cleverly refers to the toxic waste problem as the "silent spring" of the 1980s and offers citizens an interpretation which implies that solutions must come from science and technology if the situation is to be resolved at all. CBS is constantly referring to the persistence of the waste problem despite government action; it questions the actions taken by government in the past, implicitly undermining its current solutions with a regular reminder that past promises have not materialized, why should current ones? CBS does, however, recognize the magnitude of the problem and the difficulty of the battle faced, but does so in the face of statements on behalf of government that chide it for poor planning and failing to envision such problems. For example, CBS employs a striking paradox, citing as its example the United States' nuclear strength abroad versus its nuclear nightmare at home, i.e., the nuclear arsenal built to protect us from foreign hostilities is attacking us at home via the radioactive and hazardous pollution problems at defense facilities. So, while government can be applauded for its activity in one area, it cannot be applauded emphatically because of its incapacity to plan for the consequences of those activities. Thus, CBS portrays

the environmental waste situation as the government's fault because of insufficient foresight and planning; CBS, however, does suggest that the problem is not insurmountable, if we adhere to reasonable practices, i.e., practices based on sound strategies that implicitly promote the promise of science and technology as the peoples protector from government's constant blundering.

NBC

NBC is somewhat peculiar relative to the other networks; although it is a consistent follower in environmental waste coverage during the study period, NBC's coverage in the late 1980s veered in the opposite direction of the other networks. In fact, its own coverage of environmental waste issues is notably contrasted between 1975-1980 and 1985-1990; basically, beyond 1980, NBC's coverage relative to the other networks is limited with regard to appearances and sources. As shown in Figures 4.29 and 4.30 particularly, but in others as well, NBC's interest in environmental waste issues suffers considerably after 1980. When it does report on environmental waste issues and events, NBC is more anti-federal government oriented in its portrayals as indicated in Figure 4.29 and 4.30 by its reliance on subnational government and the man-in-the-street appearances in portraying information to the public; it does, however, utilize appearances by environmental spokespersons and industry representatives equally by 1990. When evaluated based on appearances by

government officials versus nongovernment persons, however, NBC's use of appearances is fairly even and consistent throughout the study period.

A puzzling aspect of NBC's coverage is its precipitous decline in the use of sources over time as shown in Figure 4.32; source use declines from approximately 53 sources used in 1980 to ten (10) sources used in 1990, the two years of the study period that contain the highest frequency of complex stories. NBC's perspective of environmental waste issues and events as news had obviously changed by 1990.

The message, drama, and visual efforts of NBC are curiously different than those of ABC and CBS; alarming messages dominate its coverage throughout the study period. NBC's drama levels tend to be more medium and high, that is until 1990, when its drama levels suddenly change to low level portrayals, which, as evidenced in Figure 4.33, had been basically nonexistent to that point. Perpetuating this disjointed approach to visual coverage is the discrepancy NBC demonstrates in the use of graphics and symbols. While NBC's use of graphics is basically neutral or mixed, its use of symbols over time is nonexistent; in fact, it is the only network that uses symbols so slightly (four in four years). Similarly, the change in visual impact of coverage, which is dominated by high and medium impact stories early in the study period, proceeds from overwhelmingly high impact stories to a majority of low impact stories by 1990.

The change in direction for NBC's coverage is especially apparent in its use of references. Most notable, however, given the propensity of references to the national government initially, is the dramatic decrease in references to national officials, which move from respectable in 1980 (N=45) to basically nonexistent by 1990 (N=7), as shown in Figure 4.34; likewise, the difference in the context of references made about government are similarly apparent as NBC moves from citing government activity with minimal blame or criticism (approximately 11 percent) to blaming or criticizing government officials four of the seven times they are referenced in 1990 (more than 50 percent). As shown in Figure 4.35, NBC's coverage initially references industry with blame and criticism as much as it cites them for actions or activities taken in regard to environmental waste problems only to completely blame or criticize industry with every reference made to them in 1985; more interestingly, however, is the turn about made by 1990, where NBC cites industry's actions and activities five of eight times, blames or criticizes them twice, and credits them once. This change of heart toward industry and government are indicative of NBC's story line, which, like CBS, portrays government as the problem and people as victims. NBC's story line, however, is different in the perspective rendered industry. The network prevents environmental waste as a mysterious disease with unknown effects posing significant danger for our future and implies, in its criticism of the federal government's lack of leadership, that the answer will come from elsewhere. presumably subgovernment and private industry. NBC

consistently presents the notion that, of all the potential actors, it is the federal government that is the least prepared to take action. In this issue domain, as shown by NBC, the federal government has continually reacted without success to a rapidly worsening problem. NBC's coverage creates the sense that effective solutions to waste problems simply lie beyond the national government's capacity.

Each network assumes a unique perspective in covering waste issues with one important point of convergence; all tend to portray the national government as a major problem source. ABC is distinguished by its portrayal characteristics and CBS in its coverage of EPA activity. NBC's coverage is the most inconsistent and the least dramatic, which is likely a result of the inconsistencies witnessed over time in its coverage. All three networks characterize the environmental waste issue as one that threatens everyone and counts among its most pronounced victim -- the innocent citizen.

Evaluation of the Hypotheses for the Visual Analysis

The visual analysis of the information and portrayals presented by the network news complements the findings of volume, complexity, and prominence by offering evidence that networks change their perspective and images of environmental waste issues and events over time while developing somewhat distinctive images across networks over time. First, the hypotheses concerning the networks' perspectives, each network's particular point of view, contend that

initially stories would be alarming (or negative) and narrowly focused, perspective hypotheses H_{4a} and H_{4b} respectively. As discovered, the networks do portray environmental waste issues more alarmingly or negatively initially; this is confirmed in Figures 4.7, 4.9, 4.10, and 4.11, which show that there is a recognizable use of alarming or negative visual supplements early in the study period. The networks do not tend to rely on a single appearance-type or source in their earliest coverage so they are not as narrowly focused as expected. While there is evidence clearly supporting the first perspective hypothesis (H_{4a}), the predicted pattern of narrowly focused early stories (H_{4b}) is mixed. There is an increase in the variety of appearance types and sources over time, but the first stories do contain some variety. Thus, perspective hypothesis H_{4a} is supported, while H_{4b} is not.

The next perspective hypothesis (H_{4c}) logically follows the first two hypotheses and asserts that the networks would shift their story perspectives over time to reflect a more reassuring (or positive) rather than alarming focus. As displayed in Figures 4.7 through 4.11, this hypothesis is obviously supported by the end of the study period as the networks begin to tone down their coverage by increasing the number of reassuring and neutral visual supplements.

Initial appearances, sources, and references are dominated by one definite component from each of the variable groups -- the man-in-the-street, national officials, and government officials, respectively. While all available

choices for appearances, sources, and references are utilized by all networks initially, their use over time entails more balanced frequencies among the intragroup choices, and hence becomes more broadly focused; this finding enables the positive evaluation of the last perspective hypothesis (H_{4d}): that complex story portrayals would become more broadly focused by the end of the study period (perspective hypothesis H_{4d}).

The image hypotheses, H_{5a} through H_{5c} , concern the focus of the coverage, whether alarming or reassuring (image hypothesis H_{5a}), and the dimensionality of coverage, whether the frequency of appearances and sources used and references made relative to the portrayal of information are unidimensional initially (image hypothesis H_{5b}) and become more multidimensional over time (image hypothesis H_{5c}). The first of these hypotheses, image hypothesis H_{5a} , is addressed somewhat through the findings ascertained about the first and third perspective hypotheses (H_{4a} and H_{4c} respectively), but differs in that it involves two additional visual supplements -- visual impact and drama level -- which are used to surmise additional portrayal information concerning alarming or reassuring visual quality. The initial years of coverage of environmental waste stories corroborate the aforementioned perspective hypotheses as they are primarily alarming. The addition of visual impact and drama level demonstrate that initial stories are of the medium or high impact categories and are substantially highly or moderately dramatic. Thus, in support of the image hypothesis H_{5a} , environmental waste stories

initially convey definite images that arouse fear with frightening images that likely evoke anxiety among citizens and initiate feelings of apprehension about the management of toxic, hazardous, solid, and nuclear wastes.

Image hypotheses H_{5b} and H_{5c} (dimensionality of coverage) can be addressed together as the finding of one quite naturally supports the well-being or refutation of the other. Given the cyclical nature of coverage by the networks over time as witnessed in the analysis of content, the analysis of these hypotheses prove somewhat troublesome. These two image hypotheses, however, are supported in that over time there is consistent variety in the frequency of references made across those assessed, and the frequency per appearance and per source over time does in fact increase; this evidences a more frequent use of corresponding appearances and sources that citizens are able to distinguish among and, based on the particular and repetitive use of appearances and sources, develop definite images of environmental waste issues and events. Compared to the initial use of appearances and sources, where many are used only once per year while others experience considerable use, the more frequent and repeated use of certain references and sources are more likely to impress upon and assist citizens in shaping an image of environmental waste issues and events. Thus, as per appearance and per source frequency increases over time, portrayals move from a unidimensional presentation, where only a few appearances or sources instill an image, to a truly multidimensional presentation of information, where the public can use the

increased repetition of certain appearances and sources to develop a more refined image of environmental waste issues and events.

The final pair of hypotheses evaluated postulate that, first, networks develop distinctive story lines over time (network hypothesis H_{6g}) and, second, that these distinctive story lines produce distinctive images of waste problems over time (network hypothesis H_{6h}). Although each network displays similar approaches to coverage provided environmental waste issues and events relative to their treatment of the federal government, their respective distinctions are evident in their handling of the other factors involved in summoning images of environmental waste problems. ABC develops and maintains an image of federal government ridicule and suggests that the solution to the waste situation lies with societal action. ABC continually emphasizes the responsibility of society to remedy its ills despite the failures of its federal government. CBS, on the other hand, while finding fault with federal government actions to date, does not promote the complete abandonment of hope for government's capacity to develop a sufficient solution to the problem; it does, however, constantly remind us that the federal government is incapable of the requisite foresight to confront this seemingly insurmountable problem of environmental waste alone, and while doing so, implicitly promotes the incorporation of some outside force, perhaps science and technology or the private sector, to assist the federal government in finding a solution to this problem. Finally, **NBC** develops and maintains an image that the federal government, based on past history, is ill

equipped to master this mysterious, elusive foe and that the leadership necessary to battle this problem will be found elsewhere, from a more credible source, most likely industry. Thus, each network does charter a distinctive story line that reinforces their distinctive images over time through their continued coverage of environmental waste issues, which supports the final two network hypotheses (H_{6g} and H_{6h}).

DISCUSSION AND CONCLUSIONS

The visual analysis of network news complements and extends the analysis of content by placing the news' portrayal in context with sound, motion, and visual supplementation. This analysis allows judgments to be made about the information portrayed in network news relative to the message, perspective, and images produced by the three networks about environmental waste issues and events. As presented in this chapter, the four years analyzed provide ample information upon which to expound, as they seem quite representative of the respective cycles of environmental coverage found in the analysis of content. Several observations are in order from the additional information provided by the visual analysis. First, it is apparent that definite and distinctive images of environmental waste issues are capable of being formed based on:

- the visual supplementation used in portraying information;
- the dramatic content and overall message conveyed in the story;
- the sources and appearances used in portraying information; and,

- the type of references made about various actors involved with these issues and events.

The contemptuous status in which the federal government is cast by each network yields an image of an impotent government that should not be associated with environmental waste management and administration. In portraying government in this manner, the networks cast industry and the private sector as those most able to resolve this dilemma with which society is confronted. Thus, a definite image of environmental waste problems is manifest -- waste is a serious issue and government mismanagement is the crux of this problem and appropriate solutions will have to emerge elsewhere.

Second, the increased appearances of subnational officials and their proliferation as references for second generation environmental issues and events is pronounced. For subnational officials, this expanded role may be a reflection of current popular attitudes: those which profess the turning over of public responsibilities, once thought to be primarily national functions, to the states, thereby reducing the federal government's role in policy administration. A likely explanation may be found in public sentiment regarding three incidents transpiring immediately prior to and during the study period: 1) the loss of public faith in the federal government generally as a result of the Vietnam War and the Watergate scandal; 2) the expanded role for state governments in environmental management through legislation passed during the 1970s and 1980s; 3) the crusade conducted by Ronald Reagan as president to reduce the federal role in policy implementation while increasing that of state and local

governments. This may partially explain the growing network focus on subnational governments in this policy area and indicate the basis for their growing reproach of the federal government's putative ineffectiveness. To be certain, there is in the nature of network coverage of waste issues a distinct sense that the networks approve of this shifting intergovernmental arrangement.

Third, the changing perspective offered industry over time is uniquely distinguished from other sources or references. Industry enjoys a particularly positive evaluation from all three networks, yielding the implicit impression that it possesses the solution to the environmental waste problem. In this way industry's credibility is enhanced significantly, especially in comparison to federal ineptitude. An explanation may lie in the availability of information for network news about industry, which is largely private and tightly controlled, versus the availability of information about government, which is public and fairly accessible. Such arrangements permit access to information about governmental activities, and the denial of information about the affairs of industry and business, that inevitably colors and potentially distorts reality as mediated by the network news.

The nature of relative information availability carries important implications for how the news industry operates and its impact. As a competitive private enterprise that depends on information for its news, rationalizations on behalf of news persons concerning the availability of information may present situations in which cost-benefit calculations dictate the

gathering and dissemination of information in a distorted fashion. For example, it is ordinarily easier to obtain reliable information about government activities than it is to acquire similar information about the conduct of private affairs. Accordingly, given that efforts to ascertain information likely correlate with availability, competition may dictate the pursuit of easier, rather than more difficult, information acquisition by news personnel. This phenomenon, as Graber (1989b, 76 and chap. 4, particularly pp. 76-93) discusses relative to the "models of the news-making process" and Bennett (1988, chap. 4) discusses relative to political reporting, is conditioned based on reporting "norms" that, while recognizing news constraints (time and space), promote standardized and routine reporting of events, reporting styles that emphasize parsimony among competing considerations. This approach to reporting the news may clarify somewhat why the federal government received a disproportionate share of criticism and blame relative to environmental waste administration -- information concerning its activities is obtained more easily.

These tentative explanations as to the nature of network coverage of second generation environmental problems clarify the underlying reasons for the dominant image of waste issues that emerged during the period. That image is primarily alarming, negative, and one of government negligence and mismanagement. This image of government, in tandem with the initial alarming and dramatic portrayals of the environmental waste situation, generated a striking early image of the future that was gloomy indeed. Iyengar and Kinder

(1987) and Iyengar, Peters, and Kinder (1982), report that early images are the ones most likely to capture the public's consciousness and endure over time with slight modifications occurring through a person's "judgment tally" (Lodge, McGraw, and Stroh 1989, 401). In the case of waste issues, one's initial judgment tally would be weighted with images that were alarming, negative, and critical of the federal government. Eventually, as portrayals became less alarming and negative, but more contentious toward the federal government, the alarming/negative tallies would likely increase at a slower pace while the federal government's culpability tally would increase significantly. Hence, the refined image emerging by 1990, which likely has its origins in 1975 or earlier, is one of federal government negligence and mismanagement of an increasingly distressing issue.

CHAPTER 5

MASS IMAGES OF WASTE ISSUES, 1975-1990

INTRODUCTION

This dissertation evaluates the coverage of second generation environmental issues by the network evening news from over sixteen years. It seeks to determine the perceptions and images developed by the major networks for the mass public through the analysis of population of news stories featuring environmental waste. The information provided in the network news promotes the construction of popular images of environmental waste issues and events. These images are a major backdrop for public discourse. Often, for most citizens, they are a primary basis for perspective on the efficacy of governmental action. In essence, the information communicated to, and the subsequent images developed by citizens allows them -- indeed may even compel many -- to perform their duties as responsible citizens.

This study systematically examines the role and performance of the network news as the primary disseminator of information in a modern democratic society. Through its definitional and interpretational capacities the evening news ultimately exercises significant influence on the public's disposition toward public policies. In areas such as environmental waste this

influence is especially acute because this type of information is rarely encountered directly by most citizens. It is primarily experienced through mediated accounts of situations and events. As technologically-based and scientifically-oriented policies now matriculate through the emergent open policy process the network news increasingly functions as the public conduit for most scientific information. In policy domain traditionally dominated by scientific, technical, and industry interests, this situation becomes problematic as media attempt to balance operational constraints of time and space with the complexity and uncertainty inherent in environmental waste issues. The simple though important fact is that the amount of information that can be presented in the television news format is extremely limited. The constrained nature of TV news presentations ultimately can weigh heavily in a policy process filled with citizens and decision makers with extremely limited scientific and technical backgrounds. Short capsules of complex and ubiquitous problems are inevitably distorting in some fashion. Thus, understanding the information being communicated about second generation environmental problems, and the resulting images portrayed by the network news, is an important step toward evaluating what is being promoted, why, and to what effect in the policy process.

EVALUATING THE THEORETICAL FRAMEWORK OF THE COMMUNICATION OF IMAGES BY THE NETWORK NEWS

If we are to understand how the network evening news affects the policy process then it is crucial that we appreciate how images emerge over time. To assess how information becomes an image of an issue, actor, problem, or event, the theoretical model presented in Chapter 2 represents the basic process by which this transformation occurs. It describes a process wherein, as reality unfolds, events are evaluated by networks according to their newsworthiness. Upon being judged "newsworthy," decisions are made concerning the portrayal of information through the news story. The portrayal of information is the process by which the mass public initially receives information and begins to form initial perceptions of reality that are mediated by the news. The initial representations of actors, issues, problems, and events, as they are broadcast over time, begin to manifest a mass image of reality. Images, therefore, are based on persistent and refined perceptions. They are directly related to the amount of news coverage afforded an incident or phenomenon over time.

The theoretical framework is applied and tested in this study by ascertaining and comparing the mass images projected for second generation environmental problems by the networks over time. Three primary propositions, statements suggesting how the model should actually perform, guide the testing of the model to ascertain its usefulness in representing how images of second

generation environmental problems and issues develop. The first proposition regards the mediation of information about incidents or phenomena to the public by the network news. The second proposition addresses the relationship of the news story to the impression initially made on the public. The third proposition relates the initial impression (perception) to the formation of an image of second generation environmental problems; the propositions are:

- Proposition 1: the network news mediates reality for the public;
- Proposition 2: network news stories generate mass public perceptions;
- Proposition 3: continued news coverage produces mass images that increases public awareness.

The propositions are complemented by three basic research questions, which further focus the evaluation of the theoretical model's effectiveness in accurately representing reality. Answers to these questions allow the propositions to be assessed based on their relevance to the model. The basic research questions leading the evaluation of the propositions are:

- To what extent did the networks cover second generation environmental problems between 1975 and 1990, and what patterns emerge over time?
- To what extent did the networks vary in their coverage of second generation environmental problems between 1975 and 1990, and what patterns emerge over time?
- What images of second generation environmental problems emerge between 1975 and 1990, and are distinctive images produced over time?

Concerning the first research question, as discussed in Chapter Three, the level coverage afforded second generation environmental waste problems over time is extensive indeed and manifests a distinctive cyclical pattern of coverage. Support for the first research question, thus, is confirmed by the findings presented in Chapter Three: the networks devoted a significant amount of attention to second generation environmental problems, clearly placing these issues on the policy agenda.

The second research question is also answered. Coverage of second generation environmental waste problems varied among the networks. CBS dominated the early coverage with ABC surging later in coverage after 1985. Except in 1983, the year of the EPA scandals, NBC did not emerge as a leader in environmental waste coverage. Here, consistent with the findings found for the first research question, a cyclical coverage of waste issues emerges over time: The networks varied significantly over time and shifted in their patterns of coverage.

The third research question similarly finds support, as definite images of waste issues are offered by all networks as well as across the networks. A clear softening of the image portrayed in the news is also apparent over time -- the news image moves from an initially predominantly dramatic-emotional-vivid portrayal to a less dramatic-emotional-vivid and more mixed portrayal of information.

The different networks definitely develop unique images of environmental waste issues: ABC disparages government efforts and emphasizes societal action to resolve this problematic situation; CBS chooses to focus on the fallibility of the federal government, while calling for better planning and management of the situation; and, NBC's coverage centers on finding solutions to handle the situation from more suitable sources, and calls for less dependence on an ineffective federal government. Thus, images of second generation environmental waste problems are evident both for and across the three networks.

The answers found for the basic research questions provide the basis for evaluating the theoretical propositions underlying this research. The first proposition obviously holds as network news provides sufficient coverage of second generation environmental problems for the public's perusal. For many issues and events, the network news provides the public with firsthand information; although mediated, the public has become accustomed to "being there" through live coverage provided by the network news. The mediated information conveyed to the public poses serious implications for second generation environmental waste problems, particularly given the complex and technical nature of the information being presented. Thus, in today's society, to acquire information about various issues and events via the network news has become standard or accepted practice, i.e., to become informed, or significantly knowledgeable of certain issues and problems, the network news suffices and

provides the public with ample information; moreover, as much of the information communicated to the public about issues, actors, problems, and events is rarely encountered directly, except through the instantaneous transmission of information by network news, the network news is proving to be the primary, and, in many cases, the sole source of information for the American public and as such mediates most information the public receives, a point particularly true for environmental waste issues and events.

Support for the second proposition is evidenced by the characteristics of coverage and the variation of coverage exhibited by the networks, both initially and over time. As evidenced from the findings, the fundamental coverage characteristics (analysis of content) display an alarming, dramatic, and highly visual disposition initially as do the visual supplications (the visual analysis) which are also initially alarming, unidimensional, and distinctive. These early portrayal patterns comprise the initial process by which the networks communicate information about environmental waste issues. Initial information generally affects what the public accepts to be important and worthy of consideration and is likely to be more impressionistic because it is one's first experience with the information for which the public is unfamiliar (Iyengar, Peters, and Kinder 1982). Citizens, thus, become acquainted with information through the news. New information about basically unfamiliar phenomenon functions as a baseline of knowledge or initiates their "judgment tally" (Lodge, McGraw, and Stroh 1989, 401) for them; this allows citizens to associate

certain information to particular characteristics and form perceptions about environmental waste issues that will likely endure. Moreover, citizens normally accept initial representations as their meaning (Iyengar, Peters, and Kinder 1982), which consequently constitutes the basis for constructing an eventual image of second generation environmental problems.

By endowing the mass public with certain information with which to form initial perceptions, the network news, through its coverage of particular issues and events over time, assists the public in forming opinions based on their understanding of the information presented to them (Krosnick and Kinder 1990; Entman 1989b; Iyengar and Kinder 1987; Page, Shapiro, and Dempsey 1987). Sustained coverage produces definite evidence of changing perspectives and images, indicating that distinctive story lines are developed by the respective networks; these findings (presented in Chapter Four) suggest support for the third proposition as the coverage of second generation environmental waste problems continues to produce and modify mass images over time. Moreover, coupled with public opinion research (Mitchell 1990; Dunlap 1989; Gillroy and Shapiro 1986), public awareness about the environment in general succeeds the coverage of environmental issues and events by the network news. Through the continuous coverage provided environmental waste issues and events over time, citizens have their levels of awareness augmented and, concomitantly their familiarity with such issues increases; these two factors may weigh heavily on citizens as they judge issues based on the information

they possess. In fact, when viewed relative to the Love Canal case example, public opinion, as depicted in Figure 5.1, appears to lag behind the volume of coverage approximately twelve (12) to eighteen (18) months as coverage in 1979 and 1980 (primarily oriented to Love Canal and the Superfund Act) is followed by a general upward trend of public concern for environmental quality that begins in 1980 and continues until 1988 (Smith 1992, 19-22; Dunlap 1989; Gillroy and Shapiro 1986). Thus, continuous network news coverage produces perceptions that manifest mass images and ultimately influence the public's general awareness of environmental issues.

Overall then, based on the positive review of the first three propositions and research questions, the theoretical model for this study is considered both useful and effective. A definite image of second generation environmental waste problems emerges over time: environmental waste is portrayed as an ominous, mysterious problem of prevalent proportions that poses a potential menace to all citizens and must, in addition to government action, be managed with assistance from other sources, e.g., science and technology or industry. It appears this image and the distinctive images of each network influence the awareness level of citizens relative to environmental issues in general and, given the evidence from the Love Canal case example in Chapter One, for environmental waste issues in particular. Because of the limitations imposed on this research, propositions four and five are not evaluated herein; however, they do provide a benchmark for conducting additional research in the future.

Future research will address the effects of mass images on the public policy process and resulting societal, economic, and regulatory behavior. As a new approach for conceptualizing the development of images of environmental waste issues by the network news, the theorized framework proves sufficiently well-suited for representing how incidents and phenomenon (reality) transpire through news coverage to form images for the mass public, and in so doing, tenders several important research implications.

MASS IMAGES OF SECOND GENERATION ENVIRONMENTAL PROBLEMS: APPLICATIONS AND CONCLUSIONS

The findings presented in this dissertation generally suggest that coverage of environmental waste issues and events varies among networks according to the fundamental coverage characteristics and visual supplications offered information communicated via the network news. The analysis, thus, permits an appraisal of how the theoretical framework may receive broader application in policy studies research, agenda setting research, public opinion research, and risk management strategies.

The Issue Attention Cycle of Environmental Waste Coverage

In his classic article "Up and Down With Ecology -- the 'Issue-Attention Cycle'," Anthony Downs proposes that cycles of attention given certain public problems would infuse environmental problems similar to social problems (Downs 1972). Downs applies the conceptual framework of issue-attention

cycles to concern for first generation environmental problems, i.e., air and water pollution. The findings from this research permit a preliminary examination of the applicability of the issue-attention cycle to a second generation environmental problem, environmental waste.

In his model Downs proposes that the issue-attention cycle is comprised of five stages:

- the pre-problem:
condition exists but has not captured public attention;
- alarmed discovery and euphoric enthusiasm:
problem is recognized by public, who want to take action directed at resolving situation;
- realizing the cost of significant progress:
the trade-offs necessary to combat undesirable situation are realized by the public, who reconsiders the merit of complete resolution;
- gradual decline of intense public interest:
upon realizing the trade-offs and ultimate difficulty associated with resolving the situation, the public becomes dissuaded, jeopardized, or disinterested in the problem;
- post-problem:
issue is superseded and no longer occupies its central position of interest (Downs 1972, 39-41).

Using several primary characteristics, Downs further qualifies the types of issues that are likely to advance through the issue-attention cycle; these characteristics are: people are not directly affected by problem and thus lose interest over time; benefits of resolution accrue to many; and, "exciting qualities" diminish or cease (Downs 1972, 41-42). Moreover, to maintain public

interest the issue must receive news coverage, which requires it to be "dramatic and exciting . . . because news is 'consumed' by much of the American public . . ." (Downs 1972, 42); this latter factor is crucial for relating the issue attention cycle to the media's potential influence throughout the various stages of the cycle. In the article, Downs submits the public's "concern for the environment" to the various stages and discovers that environmental problems follow the model fairly well, at least through the initial stages (the latter stages are not tested as the issue had not progressed beyond the third stage at the time of inquiry), and exhibit distinct characteristics vis a vis social problems. For example, Downs (1972, 45) notes that **"regarding many forms of pollution, we are now rightly upset over practices and conditions that have largely been ignored for decades"** (emphasis in the original) and that the media contributes to the situation through an "'explosion' of alarmist rhetoric" on environmental problems while disparaging the "'system' in the United States" (Downs 1972, 45). Not surprisingly, the conditions Downs prescribed in his article still exist today and are similarly applicable to the current cycles of coverage evidenced from the findings presented in Chapters Three and Four and the public opinion data offered in this chapter as shown in Figure 5.1. Thus, from the findings, issue-attention cycles, at least tentatively, are apparent over time as both news coverage and public opinion follow somewhat cyclical patterns, mirroring Downs' (1972) hypothesized cyclical trend for first generation environmental problems. Further research and analysis of the cycle

characteristics are necessary to empirically corroborate Downs' research and further the understanding of issue-attention cycles as they apply to second generation environmental issues, for example whether their presence and relevance are based on the explanations of cycles as offered by Downs.

Public Opinion and Media Effects

Much research suggests that public opinion is related to media coverage and portrayals (Zaller 1991; Krosnick and Kinder 1990; Entman 1989b; Iyengar and Kinder 1987; Page, Shapiro, and Dempsey 1987; Protess, et al. 1987; Gerbner et al. 1982; Iyengar, Peters, and Kinder 1982); in fact, Zukin (1981, 359) contends that "[t]he **mass media** and public opinion are inextricably wed" [emphasis in original]. Public opinion about environmental concern in the United States is not immune to this media-opinion web, as one has changed the other is shown to have changed similarly. Opinions on environmental concern, therefore, demonstrate a cyclical pattern like that discovered for news coverage.

According to Smith (1992, 19-22), Mitchell (1990), and Dunlap (1989), public opinion about environmental concern has a strong origin dating back to the late 1960s through the early 1970s, a period marked by the first Earth Day and Rachael Carson's book about the dangers of chemicals in the United States (**Silent Spring**); during the mid to late 1970s and early 1980s, however, environmental concern begins to wane, reaching its lowest levels of concern

since 1965. Over time, concern for the environment changes course again as it experiences a moderate resurgence during the mid 1980s; this increased level of concern also manifest itself through memberships in environmental groups as they incurred significant average annual membership increases during the 1980s (Mitchell 1990, 92). The average annual increase in membership during the 1980s ranged from a low of four (4) percent for the National Audubon Society to a high of 67 percent for the Wilderness Society, while several other prominent environmental groups achieved between nine and twenty percent average annual growth during this period.

Relations can be confidently, but not absolutely, established between network news coverage and its subsequent effects based on the findings at hand. Given the evidence presented in Chapters Three and Four, there are instances throughout the study period that suggest relationships exist between news coverage of environmental waste issues and events and public environmental concern. The patterns of environmental concern over time relative to the trends of news coverage of environmental waste issues and events suggest that news coverage has a lagged effect on the disposition of attitudes about environmental concern. As shown in Figure 5.1, it appears that news coverage succeeds changes in environmental concern by approximately twelve to eighteen months. For example, the frequency of coverage provided environmental waste increases from 1977 to 1980 preceding the post 1970s increase in environmental concern which commences in 1982; this pattern is

apparent for the 1983 coverage and the subsequent increase in environmental concern in 1984 and 1985. Thus, given these patterns, one may speculate that the increased coverage rendered environmental waste issues from 1986 through 1990 will precede an increase in environmental concern from 1988 through 1992¹; this speculation is corroborated for the expected initial increase in 1988 and 1989 by Mitchell's (1990, 85) analysis of public opinion data as he notes that responses to a "most important problem" query increased from two (2) percent in 1987 to six (6) percent in 1988 and jumped dramatically to sixteen (16) percent by 1989. The reason for the 1989 increase is largely attributed to the **Exxon Valdez** oil spill, which lends further support to media coverage and the effects it poses for public opinion as it received extensive media attention (although its analysis is beyond the scope of this study). In addition, Rosenbaum (1991, 25-26) cites public opinion data showing support for environmental protection, regardless of costs, at rates of 65 percent or greater from 1986 through 1989. Based on the evidence from various public opinion polls, a strong case can arguably be forwarded that these changes in attitudes are attributable to media coverage; such an argument, however, cannot discount the other factors that affect the dynamics of opinion formulation, but the evidence strongly suggests that media comprises a highly

¹Other factors obviously implicate the movement of public opinion during the 1980s; for instance, Reagan's environmental neglect, the post 1982 economic growth, environmental accidents or disasters, and the reauthorization of numerous environmental laws transpired during this period as well.

integral component in the development of public opinion about environmental concern. Further research will concentrate on developing the relationship between the news coverage evidence offered herein and delineating public opinion data over time to consider more closely the extraneous factors that confound the understanding of public opinion movement, i.e., strength of the economy, environmental agenda, and environmental accidents or disasters; also, public opinion data relating to environmental waste issues specifically must be acquired rather than merely using the more general environmental concern measure discussed.

Agenda Setting, Environmental Policy, and Media Coverage

As demonstrated by the affects of the media on public opinion, the news is a formidable instrument in determining what issues acquire public attention; such attention creates a "political climate that determines the likely thrust of public opinion" (Graber 1989b, 287), devising a situation wherein public officials must respond to public opinion with relevant public policies to manage public problems. The network news magnifies problems and issues for the public, thereby focusing attention on them and promoting increased public awareness. The influence of the media helps to identify and define problems, which aids issue recognition for officials, and eventually confers policy status upon problems and issues that receive coverage (Starling 1990). The media, thus,

serve as a "readily usable, policy-relevant" source of information for government officials and public policy makers (Cobb and Elder 1984, 392).

The media's ability to influence the policy agenda is evidenced throughout the study period, however, one situation in particular, Love Canal (discussed in Chapter One), represents the effect of media on the disposition of environmental waste problems. Although the situation had already been somewhat placed on the policy agenda (environmental legislation was being considered at the time of the discovery of the contamination), the media coverage rendered Love Canal a national problem of disastrous proportions with the potential of affecting all citizens. By merely covering the Love Canal situation, the media, according to Starling (1990) and Kingdon (1984), placed the issue in the "public eye" which conferred its policy status and, through the alarming perspective afforded the situation, ultimately dictated that a public policy response be forthcoming. Moreover, the complexity of the situation coupled with the unknown qualities of toxic chemicals and their perceived danger, created a situation made for news -- it was dramatic and controversial.

Through coverage of the events surrounding Love Canal, the network news not only defined the issue as a problem, but maintained its saliency by increasing the frequency of coverage afforded the problem, referencing it relative to the toxic disposal problem, or associating Love Canal to other areas experiencing toxic waste problems. Maintaining the issue's salience allowed the network news to define the situation; the network news portrayed Love

Canal as a "chemical time bomb" (ABC 4/22/80) and related it to similar situations throughout the United States, suggesting that the problem was not restricted to Love Canal but that it could affect anybody, anywhere. The networks maintained or perpetuated public concern through their dramatic descriptions of events surrounding Love Canal; this is evidenced by ABC's (5/21/80) labeling of the situation as an "environmental catastrophe," while CBS (5/5/80) referred to the situation as the "silent spring of the 80s." By maintaining coverage and depicting the situation with such drama, the network news practically singlehandedly established Love Canal as a problem deserving of national attention, which it received; President Carter and Congress responded by declaring a state of emergency for the area, initiating legal action against the Hooker Chemical Corporation, and providing financial assistance to residents (in cooperation with the state of New York). In addition, with the full support of EPA, several members of Congress promulgated Superfund legislation through Congress, which, until that point, had only a remote chance of reaching the House floor due to its lack of support. Furthermore, the network news played an important part in the bill's matriculation through Congress by showing testimony given at Senate hearings; they personalized the tragedy of mismanaged toxic chemicals that were improperly disposed of by showing the emotional testimony given by "everyday" citizens. Such coverage proved significant to maintaining public awareness of the situation and virtually ensured that government would confront and likely resolve the problem.

In the process of explicating information about environmental waste to the public, the network news cast a definite image of the chemical waste disposal situation: while the situation threatened all citizens, the government had yet to take action to remediate it until the public finally demanded it; upon learning about its dangers through the network news, people reacted to the situation as they understood it, and ultimately, prevailed upon government officials to resolve the problem, which they did. The case example of Love Canal is but one demonstration of the influence the network news exercised in agenda setting for government during the study period; some other examples are:

- EPA/Gorsuch/Lavelle: the scandal that led to the resignation and jailing of EPA officials accused of mishandling government interests by consulting with business and industry in the establishment of waste management practices;
- Garbage Barge: a barge loaded with solid waste became a national symbol for the solid waste disposal problem confronting the United States and prompted many states to pass legislation restricting the importation of solid wastes from other states; and,
- Beach Waste: hazardous waste and low-level radioactive hospital waste, originally disposed of at sea, began washing ashore on New England beaches, resulting in beach closings, a public health scare, and reconsideration of the methods used for disposing of such wastes.

However, as each requires further examination to adequately understand the dynamics of their respective situations, they pose sufficient opportunities for future research as examining each would allow for comparisons of coverage and policy responses across issues.

Challenges for Managing the Communication of Risk Through the Media

Another aspect of media coverage of environmental issues that is addressed sufficiently by the results of this research is the management of risk information through the media. As Kasperson et al. (1988, 181) observe, "risk has meaning only to the extent that it treats how people think . . . ," and how people think about risk is generally defined by their information source, usually the network news. The media provide a crucial link in the transmission of scientific and technical research, but they "complicate the risk communication process in a variety of ways" (Wilkins and Patterson 1990, 12). The Love Canal case example provides sufficient evidence that the meaning of risk is dependent on how people interpret risk information and that the communication of risk information is confounded by the network news. For example, regarding Love Canal, the media report of the findings from the preliminary study were reported as if they were definitive, when the study was conducted only to determine whether current conditions warranted further study. The study was never intended to serve as the conclusive last word on the chromosomal disposition of residents in the area; however, a "leak" prevented this aspect of the story from acquiring sufficient saliency as, upon the study's disclosure by the media, the urgency of the situation suppressed any concern for the study's serious methodological weaknesses. Yet, this inaccurate study subsequently served as the study that prompted government to respond. In fact, at extraordinary psychological costs and taxpayer expense, people in Love Canal

were moved from homes that were located approximately three blocks from the contaminated area and which showed no evidence of chromosomal damage to persons residing in these homes (Levine 1982). Thus, the communication of information by the network news and other information sources altered the policy response considerably and perpetuated a poorly planned and hastily developed policy that was based on scientific information derived from questionable practices, but not communicated as such; the communication of information by the network news concerning the risks associated with living near the disposal site provides a unique case example in which the capsulation of complex and technical information in a brief report proved to be one of several factors that seriously compromised a more cogent approach for resolving the Love Canal problem.

Implications of the Mass Images of Environmental Waste Issues and Events

The basis for undertaking this study was to determine if environmental waste issues and events are covered by the media and, if they are, what images of environmental waste issues are portrayed to citizens by the networks; in essence, the purpose of this study is to discern how the networks communicate information to the public about environmental waste issues and understand how this information affects activities undertaken to redress the waste problem. Having addressed these concerns, two primary implications, based on the images projected by the network news, are most prominent.

First, the changes in the patterns of coverage associated with industry reflect changes unlike the other references as the use of industry in appearances or as sources increases over time while industry's references endure and move from initial culpability to having their actions cited and credited. Why did industry change in this manner? A partial answer is stimulated by Stern (1991, 115-116) relative to his discussion on risk communication in which he observes that "[t]he most thorough efforts [at risk communication] are probably made by industrial groups whose interest can be deeply affected by public perceptions of risks associated with their industries." Industry, therefore, with more at stake, i.e., products and profits, apparently developed a proactive effort for combatting the initially negative and alarmist perspectives rendered it via the news story. Evidently their efforts proved worthwhile as industry's public disposition changed over time, which raises new questions (beyond the scope of this analysis) as to the origin and quality of the information regarding industry as represented in reports concerning environmental waste issues, i.e., does industry manufacture its own image via the news?

Another interesting implication derived from this analysis of news coverage is the portrayal of federal government as inept in its management of environmental wastes. Confidence in the federal government's ability to manage anything waned in the 1970s and 1980s; is this a fair evaluation or does the news industry perpetuate myths concerning the government's ability to manage complex and arduous problems? As Downs and Larkey (1986, 3)

state, much of the popular perceptions surrounding government "are not founded on careful analysis but on an amalgam of ideology, anecdotal evidence, and invidious comparisons." Although basically unfair, and as evidenced in this study, government receives a disproportionate share of criticism through the media. The consequences of such deprecation likely undermine the ability of the federal government to develop and implement adequate environmental waste policies; also, the character of waste policy invites conflict by virtue of its scientific orientation. Science is a replicable enterprise involving choices in research methodologies and as such choices are made so too are assumptions about ensuing procedures, which foster debate and the never-ending pursuit of knowledge in scientific research (Stern 1991, 103-106). In fact, science promotes such debate through "scientific norms [that] ideally harness conflict to expose and correct inaccurate methods, weak reasoning, and fraud" (Stern 1991, 105). However, as Buchholz, Marcus, and Post (1992, 3) note, "[t]he symptoms of environmental problems may be in the biological world, but their source is in socioeconomic organizations, and the **solutions are ultimately political**" (emphasis added). Despite the refrain of government incapacity, decisions concerning the management of the environment are ultimately choices that must be made in the public arena and as such, because of their multifarious and controversial nature, they will depend on strong public leadership acting in the public interest; in fact, making policy involving scientific research and analyses is not conducive to democratic debate

as it begs engagement and contradiction. Thus, undermining government's ability to manage the environmental situation may pose significant consequences for society if government, as the purveyor of public interest, is excused from the decision making table.

Images portrayed by network news weigh heavily on the choices made by the mass public relative to the management of environmental waste issues and problems. Therefore, the information presented via the network news should not be dismissed as ineffectual, but should be analyzed systematically to understand the dynamic effects it poses for society. As such, the model developed herein presents an initial effort at a systematic assessment of the implications offered our democratic devices via the images established through the communication of information to the mass public. Future research is expected to extend this model to include assessments of the effects images of environmental waste issues and events hold for public policy choices and the potential effect these choices pose for societal, regulatory, and economic behavior in the United States.

LIST OF REFERENCES

REFERENCES

- Amy, Douglas J. 1987. **The Politics of Environmental Mediation**. New York: Columbia University Press.
- Behr, Roy L. and Shanto Iyengar. 1985. "Television News, Real World Cues, and Changes in the Public Agenda." **Public Opinion Quarterly** 49: 38-57.
- Bennett, W. Lance. 1981. "Perception and Cognition: An Information-Processing Framework for Politics." In **The Handbook of Political Behavior**, volume 1, ed. Samuel L. Long, 69-193, New York: Plenum Press.
- Bennett, W. Lance. 1988. **News: The Politics of Illusion**, 2nd edition. White Plains: Longman, Inc.
- Berelson, Bernard, Paul Lazarsfeld, and William McPhee. 1954. **Voting**. Chicago: Chicago University Press.
- Bingham, Gail. 1986. **Resolving Environmental Disputes: A Decade of Experience**. Washington, D.C.: Conservation Foundation.
- Buchholz, Rogene A., Alfred A. Marcus, and James E. Post. 1992. **Managing Environmental Issues: A Casebook**. Englewood Cliffs, N.J.: Prentice Hall.
- Campbell, Angus, Philip E. Converse, Warren E. Miller, and Donald E. Stokes. 1960. **The American Voter**. New York: Wiley.

- Chaffee, Steven H. and Joan Schleuder. 1986. "Measurement and Effects of Attention to Media News." **Human Communication Research** 13: 76-107.
- Cobb, Roger W. and Charles D. Elder. 1971. "The Politics of Agenda Building: An Alternative Perspective for Modern Democratic Theory." **Journal of Politics** 33: 892-915.
- Cobb, Roger W. and Charles D. Elder. 1981. "Communication and Public Policy." In **Handbook of Political Communication**, eds. Dan D. Nimmo and Keith R. Sanders, 391-416, Beverly Hills: Sage Publications.
- Conover, Pamela J. and Stanley Feldman. 1989. "Candidate Perception in an Ambiguous World: Campaigns, Cues, and Inference Processes." **American Journal of Political Science** 33:912-940.
- Downs, George W. and Patrick D. Larkey. 1986. **The Search for Government Efficiency**. New York: Random House.
- Dubin, Robert. 1969. **Theory Building**. New York: The Free Press.
- Dunlap, Riley E. 1989. "Public Opinion and Environmental Policy." In **Environmental Politics and Policy: Theories and Evidence**, ed. James P. Lester, 87-134, Durham, North Carolina: Duke University Press.
- Dye, Thomas R. 1992. **Understanding Public Policy**. Englewood Cliffs, N.J.: Prentice Hall.

- Dye, Thomas R. and Harmon Zeigler. 1986. **American Politics in the Media Age**. Monterey, Calif.: Brooks/Cole Publishing Company.
- Entman, Robert M. 1989a. **Democracy Without Citizens: Media and the Decay of American Politics**. New York: Oxford University Press.
- Entman, Robert M. 1989b. "How the Media Affect What People Think: An Information Processing Approach." **American Political Science Review** 51: 347-370.
- Epstein, Edward J. 1973. **News from Nowhere**. New York: Vintage Books.
- Erbring, Lutz, Edie M. Goldenberg, and Arthur H. Miller. 1980. "Front Page News and Real World Cues: A New Look at Agenda-Setting." **American Journal of Political Science** 24: 16-49.
- Frank, R. S. 1973. **Message Dimensions of Television News**. Lexington, Mass.: Lexington Books.
- Freedman, Philip E. and Anne Freedman. 1981. "Political Learning." In **The Handbook of Political Behavior**, volume 1, ed. Samuel L. Long, 255-303, New York: Plenum Press.
- Gerbner, George, Larry Gross, Michael Morgan, and Nancy Signorielli. 1982. "Charting the Mainstream: Television's Contributions to Political Orientations." **Journal of Communications** 32: 100-127.
- Gillroy, John M. and Robert Y. Shapiro. 1986. "The Polls: Environmental Protection." **Public Opinion Quarterly** 50: 270-279.

Goggin, Malcolm L., Ann O'M. Bowman, James P. Lester, and Laurence J.

O'Toole, Jr. 1990. **Implementation Theory and Practice: Toward a Third Generation.** Glenview, Ill.: Scott, Foresman/Little, Brown.

Graber, Doris A. 1984. **Processing the News: How People Tame the Information Tide.** New York: Longman.

Graber, Doris A. 1989a. "Content and Meaning: What's It All About?" **American Behavioral Scientist** 33: 144-152.

Graber, Doris A. 1989b. **Mass Media and American Politics.** Washington, D.C.: Congressional Quarterly.

Graham, George J. 1971. **Methodological Foundations for Political Analysis.** Waltham, Mass.: Xerox College Publishing.

Hohenemser, C., Robert W. Kates, and Paul Slovic. 1983. "The Nature of Technological Hazard." **Science.** 220: 378-384.

Holsti, Ole R. 1969a. "Content Analysis." In **The Handbook of Social Psychology**, second edition, volume II, eds. Gardner Lindzey and Elliot Aronson, 596-692, Reading, Mass.: Addison-Wesley Publishing.

Holsti, Ole R. 1969b. **Content Analysis for the Social Sciences and Humanities.** Reading, Mass.: Addison-Wesley Publishing.

Hoover, Kenneth R. 1988. **The Elements of Social Scientific Thinking.** New York: St. Martin's Press.

Iyengar, Shanto and Donald R. Kinder. 1987. **News That Matters.** Chicago: University of Chicago Press.

- Iyengar, Shanto, Mark D. Peters, and Donald R. Kinder. 1982. "Experimental Demonstrations of the 'Not So Minimal' Consequences of Television News Programs." **American Political Science Review** 76: 848-858.
- Kasperson, Roger E., Orwin Renn, Paul Slovic, Halina S. Brown, Jacque Emel, Robert Goble, Jeanne X. Kasperson, and Samuel Ratick. 1988. "The Social Amplification of Risk: A Conceptual Framework." **Risk Analysis** 8: 177-187.
- Katz, Elihu and Paul F. Lazarsfeld. 1955. **Personal Influence: The Part Played by People in the Flow of Mass Communications**. New York: Free Press.
- Kingdon, John W. 1984. **Agendas, Alternatives, and Public Policies**. Boston: Little, Brown and Company.
- Kraft, Michael E. and Norman J. Vig, eds. 1990a. **Environmental Policy in the 1990s**. Washington, D.C.: Congressional Quarterly.
- Kraft, Michael E. and Norman J. Vig. 1990b. "Environmental Policy from the Seventies to the Nineties: Continuity and Change." In **Environmental Policy in the 1990s**, eds. Norman J. Vig and Michael E. Kraft, 3-31, Washington, D.C.: Congressional Quarterly.
- Krippendorff, Klaus. 1980. **Content Analysis: An Introduction to Its Methodology**, volume 5. Beverly Hills: Sage Publication

- Krosnick, Jon A. and Donald R. Kinder. 1990. "Altering the Foundations of Support for the President Through Priming." **American Political Science Review** 44: 497-512
- Krupar, Karen R. and Joseph J. Krupar. 1989. "Communicating Strategies for Resolving Environmental Issues." **International Journal of Environmental Studies** 34: 11-23.
- Lachman, Roy, Janet L. Lachman and Earl C. Butterfield. 1979. **Cognitive Psychology and Information Processing: An Introduction**. Hillsdale, N.J.: Lawrence Erlbaum.
- Landy, Marc K., Marc J. Roberts, and Stephen R. Thomas. 1990. **The Environmental Protection Agency: Asking the Wrong Questions**. New York: Oxford University Press.
- Lang, Gladys E. and Kurt Lang. 1981. "Watergate: An Exploration of the Agenda-Building Process." In **Mass Communication Yearbook II**, eds. G.C. Wilhoit and H. deBock, 447-468, Beverly Hills: Sage Publications.
- Levine, Adeline Gordon. 1982. **Love Canal: Science, Politics, and People**. Lexington, Mass.: D.C. Heath.
- Linsky, Martin. 1986. **Impact: How the Press Affects Federal Policymaking**. New York: W. W. Norton.
- Linsky, Martin, Jonathan Moore, Wendy O'Donnell, and David Whitman. 1986. **How the Press Affects Federal Policymaking**. New York: W. W. Norton.

Lodge, Milton, Kathleen M. McGraw, and Patrick Stroh. 1989. "An Impression Driven Model of Candidate Evaluation." **American Political Science Review** 83: 399-419.

Manheim, Jarol B. and Richard C. Rich. 1986. **Empirical Political Analysis**. New York: Longman.

Manheim, Jarol B. 1987. "A Model of Agenda Dynamics." In **Communication Yearbook** 10, ed. Margaret McLaughlin, 499-516, Beverly Hills: Sage Publications.

Markus, Hazel and R.B. Zajonc. 1985. "The Cognitive Perspective in Social Psychology." In **The Handbook of Social Psychology**, third edition, volume I, eds. Gardner Lindzey and Elliot Aronson, New York: Random House.

McCabe, Amy Snyder. 1987. **Open Systems of Environmental Decision Making: The MRS Nuclear Waste Siting Case In Tennessee**. Ph.D. diss., The University of Tennessee, Knoxville.

McCombs, Maxwell E. and Donald L. Shaw. 1972. "The Agenda-Setting Function of Mass Media." **Public Opinion Quarterly** 36: 176-187.

Mitchell, Robert Cameron. 1990. "Public Opinion and the Green Lobby: Poised for the 1990s?" In **Environmental Policy in the 1990s**, eds. Norman J. Vig and Michael E. Kraft, 81-99, Washington, D.C.: Congressional Quarterly.

- Nimmo, Dan and James E. Combs. 1990. **Mediated Political Realities**. 2d edition. New York: Longman.
- Nimmo, Dan and James E. Combs. 1985. **Nightly Horrors: Crisis Coverage in Television Network News**. Knoxville, Tenn.: The University of Tennessee Press.
- O'Brien, Robert M., Michael Clarke, and Sheldon Kamieniecki. 1984. "Open and Closed Systems of Decision Making: The Case of Toxic Waste Management." **Public Administration Review** 44: 334-340.
- Page, Benjamin I., Robert Y. Shapiro, and Glenn R. Dempsey. 1987. "What Moves Public Opinion?" **American Political Science Review** 81: 23-43.
- Protess, David L., Fay Lomax Cook, Thomas R. Curtin, Margaret T. Gordon, Donna R. Leff, Maxwell E. McCombs, and Peter Miller. 1987. "The Impact of Investigative Reporting On Public Opinion and Policymaking: Targeting Toxic Waste." **Public Opinion Quarterly** 51: 166-185.
- Ranney, Austin. 1983. **Channels of Power: The Impact of Television on American Politics**. New York: Basic Books.
- Reese, Stephen D., and M. Mark Miller. 1981. "Political Attitude Holding and Structure: The Effects of Newspaper and Television News." **Communication Research** 8: 167-188.
- Rosenbaum, Walter A. 1991. **Environmental Politics and Policy**. 2d ed. Washington, D.C.: Congressional Quarterly.

- Sabatier, Paul A. and Daniel A. Mazmanian. 1980. "The Implementation of Public Policy: A Framework of Analysis." **Policy Studies Journal** 8: 538-560.
- Sears, David O. 1969. "Political Behavior." In **The Handbook of Social Psychology**, second edition, volume V, eds. Gardner Lindzey and Elliot Aronson, 315-458, Reading, Mass.: Addison-Wesley Publishing.
- Singer, Eleanor. 1990. "A Question of Accuracy: How Journalists and Scientists Report Research on Hazards." **Journal of Communications**. 40: 102-116.
- Smith, Zachary A. 1992. **The Environmental Policy Paradox**. Englewood Cliffs, N.J.: Prentice-Hall.
- Snow, Robert P. 1983. **Creating Media Culture**. Beverly Hills: Sage Publications.
- Starling, Grover. 1988. **Strategies for Policy Making**. Chicago: The Dorsey Press.
- Stern, Paul C. 1991. "Learning Through Conflict: A Realistic Strategy for Risk Communication." **Policy Sciences**. 24: 99-119.
- Susskind, Lawrence and Jeffrey Cruikshank. 1987. **Breaking the Impasse: Consensual Approaches to Resolving Public Disputes**. New York: Basic Books.

- Tchobanoglous, George, Hilary Theisen, and Rolf Eliassen. 1977. **Solid Wastes: Engineering Principles and Management Issues**. New York: McGraw Hill Books.
- Time**, January 2, 1989.
- U. S. Environmental Protection Agency. 1988. **Environmental Progress and Challenges: EPA's Update**. Washington, D.C.: GPO.
- U. S. Environmental Protection Agency. Science Advisory Board. 1990. **Reducing Risk: Setting Priorities and Strategies for Environmental Protection**. Washington, D.C.: U.S. Environmental Protection Agency.
- Vanderbilt University Television News Archives. 1975-1990. **Television News Index and Abstracts**, quarterly. Nashville, Tenn.: The Jean and Alexander Heard Library, Vanderbilt University.
- Weiss, Walter. 1969. "The Effects of the Mass Media of Communication." In **The Handbook of Social Psychology**, second edition, volume V, eds. Gardner Lindzey and Elliot Aronson, 77-195, Reading, Mass.: Addison-Wesley Publishing.
- Willis, Jim. 1991. **The Shadow World: Life Between the News Media and Reality**. New York: Praeger.
- Wilkins, Lee and Philip Patterson. 1990. "Risky Business: Covering Slow-Onset Hazards as Rapidly Developing News." **Political Communication and Persuasion**. 7: 11-23.

Wilson, Stan LeRoy. 1989. **Mass Media/ Mass Culture**. New York: Random House.

Zaller, John. 1991. "Information, Values, and Opinion." **American Political Science Review** 85: 1215-1237.

Zukin, Cliff. 1981. "Mass Communication and Public Opinion." In **Handbook of Political Communication**, eds. Dan D. Nimmo and Keith R. Sanders, 359-390, Beverley Hills, Calif.: Sage.

APPENDIX

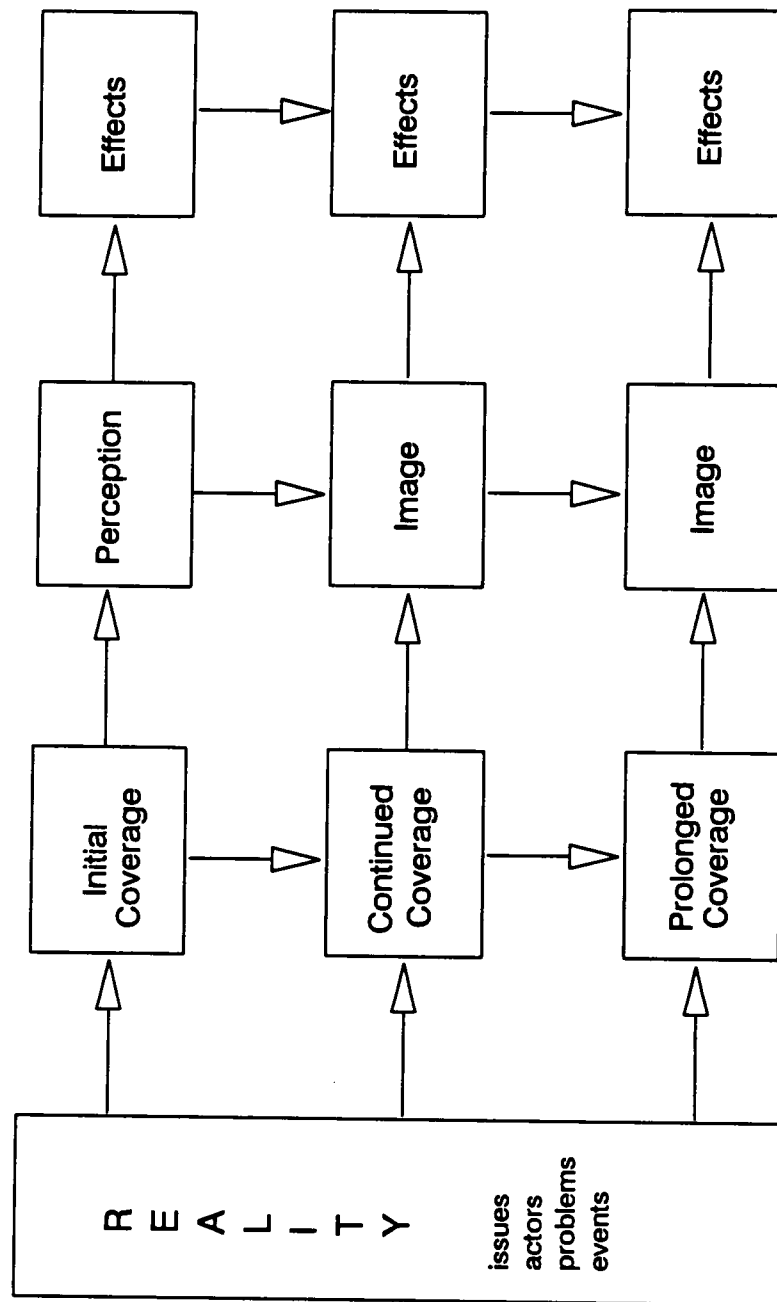


FIGURE 2.1
Theoretical Framework of the Communication of Images and
Effects by the Network News

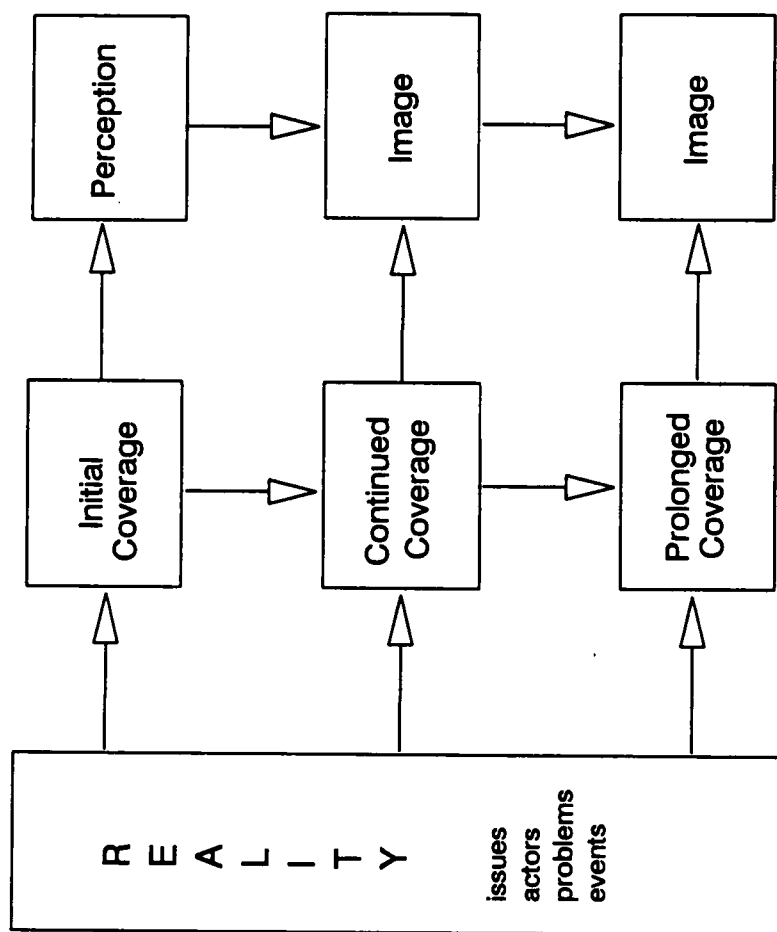


FIGURE 2.2
Theoretical Framework of the Communication
of Images by the Network News

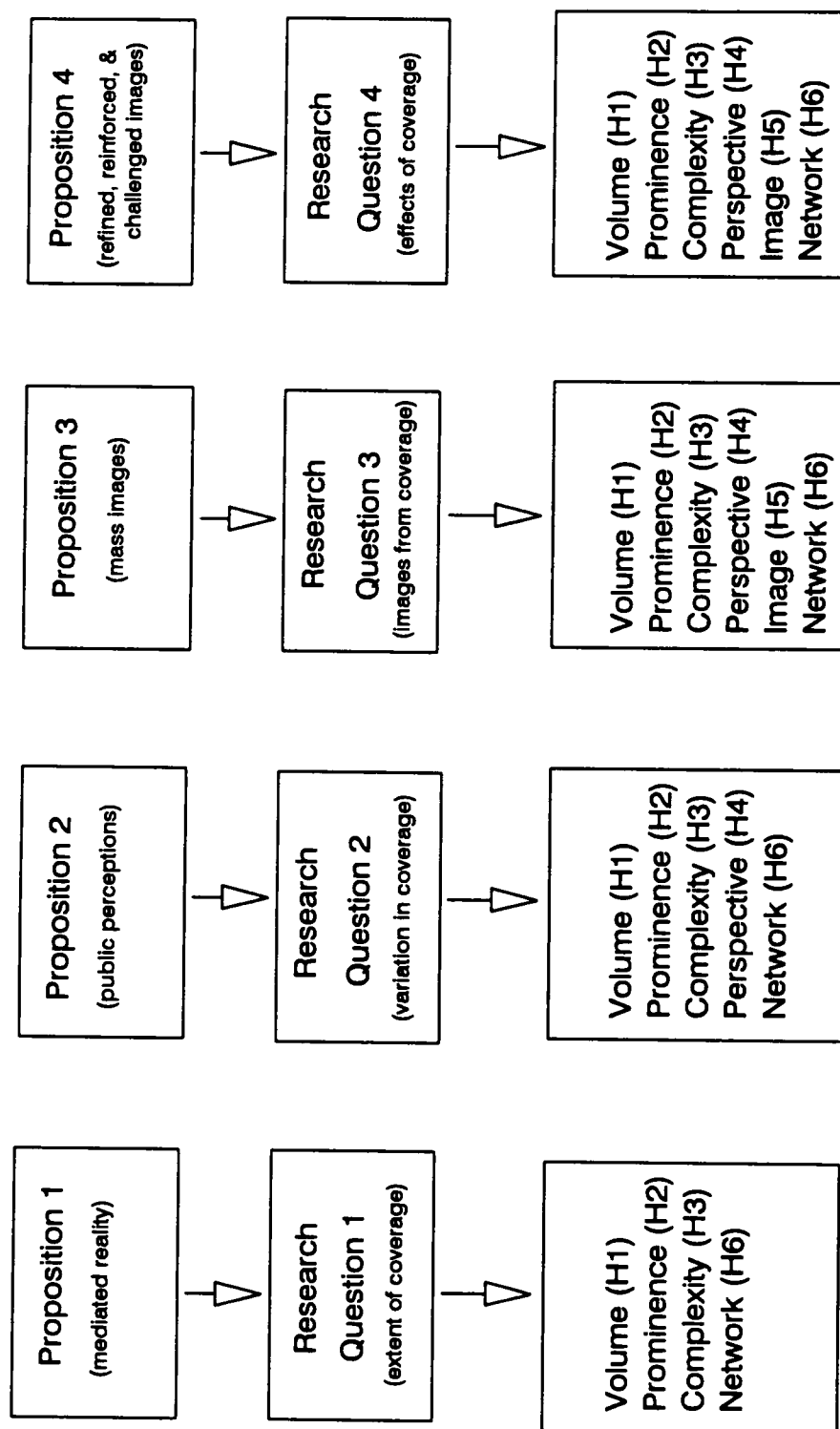


FIGURE 2.3
 The Relationships Among Propositions, Research Questions, and
 Hypotheses for the Communication of Images
 by the Network News

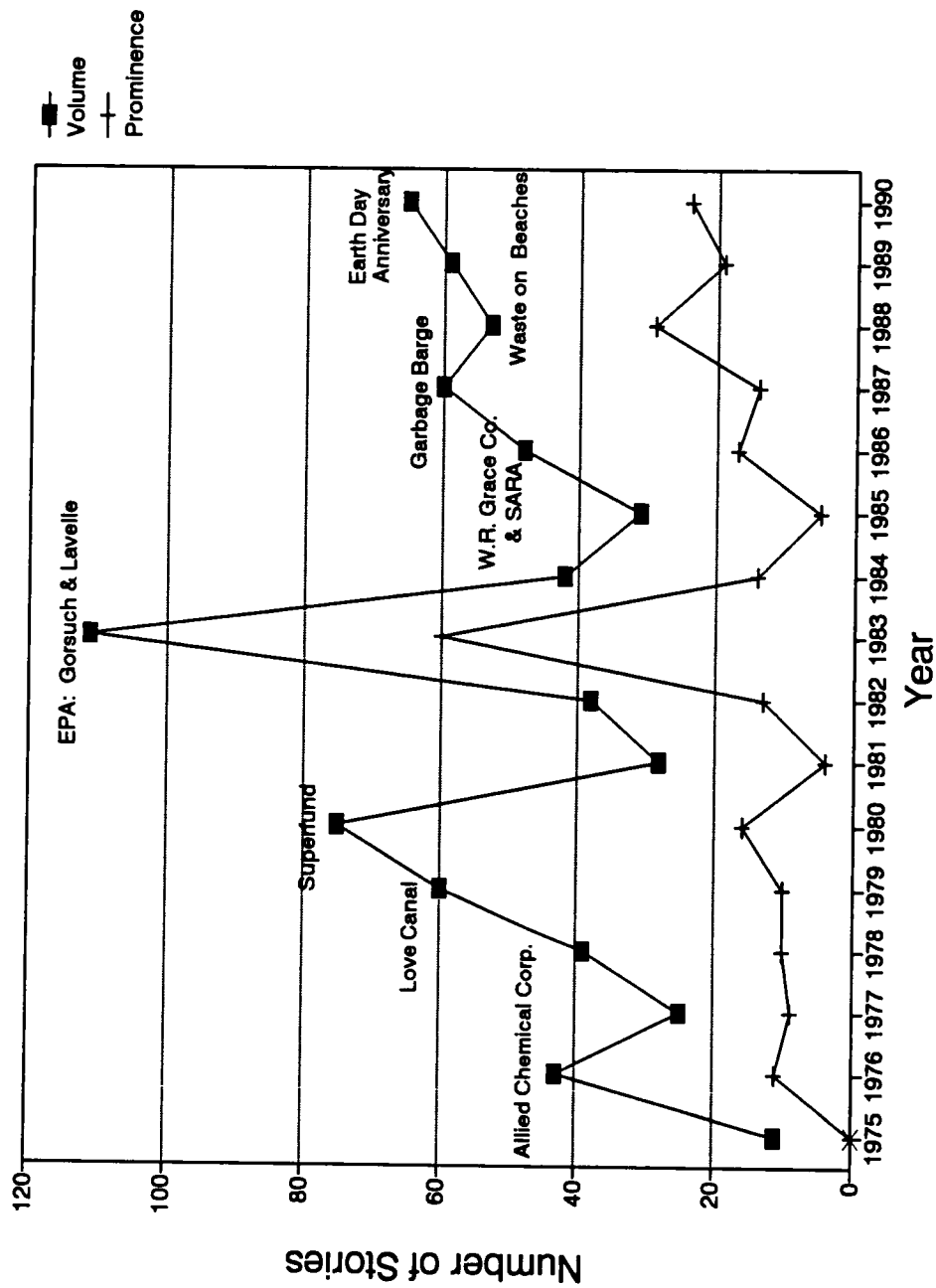


FIGURE 3.1
The Volume and Prominence of Waste Stories, 1975-1990

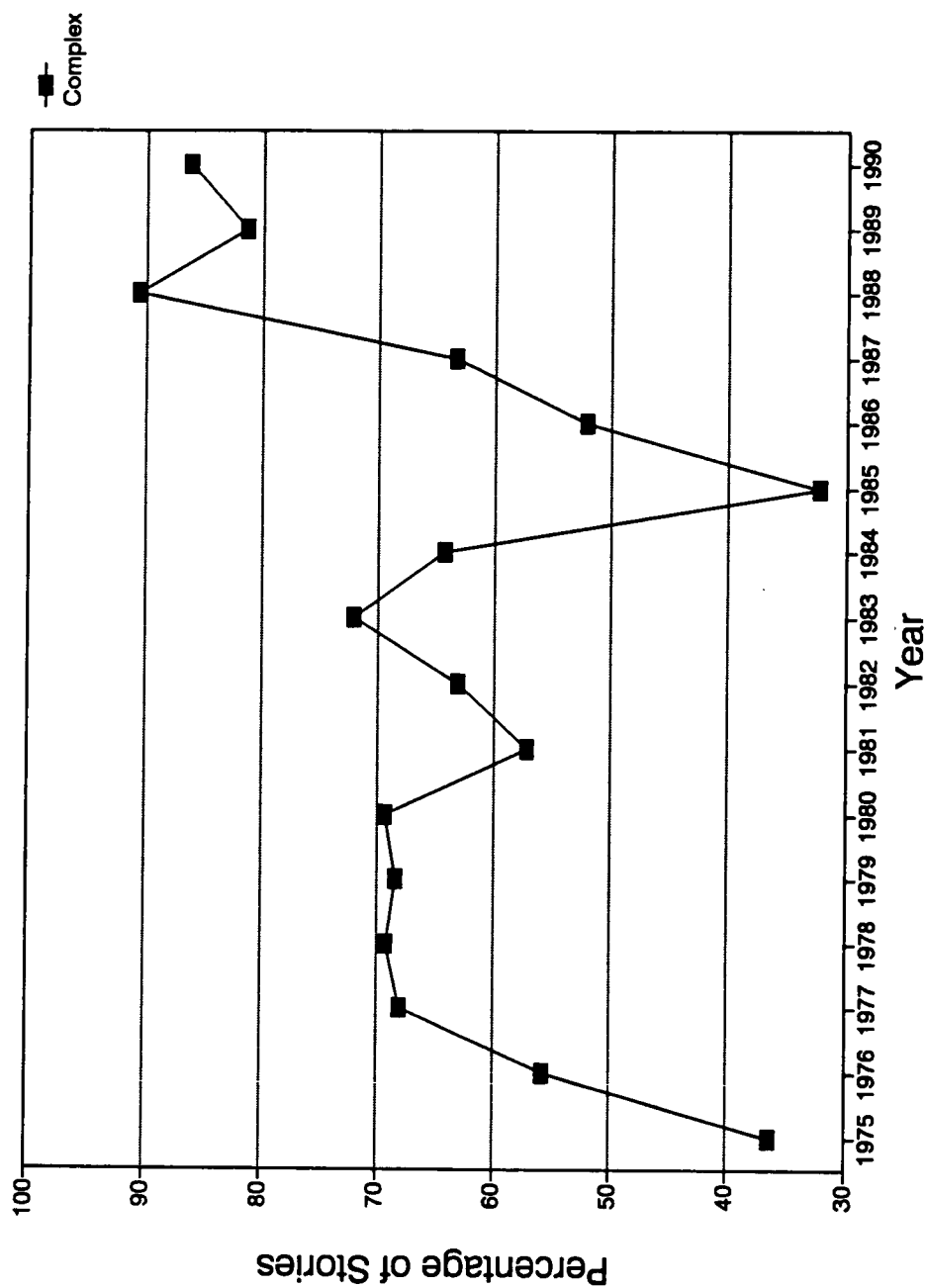


FIGURE 3.2
Complex Waste Stories, 1975-1990

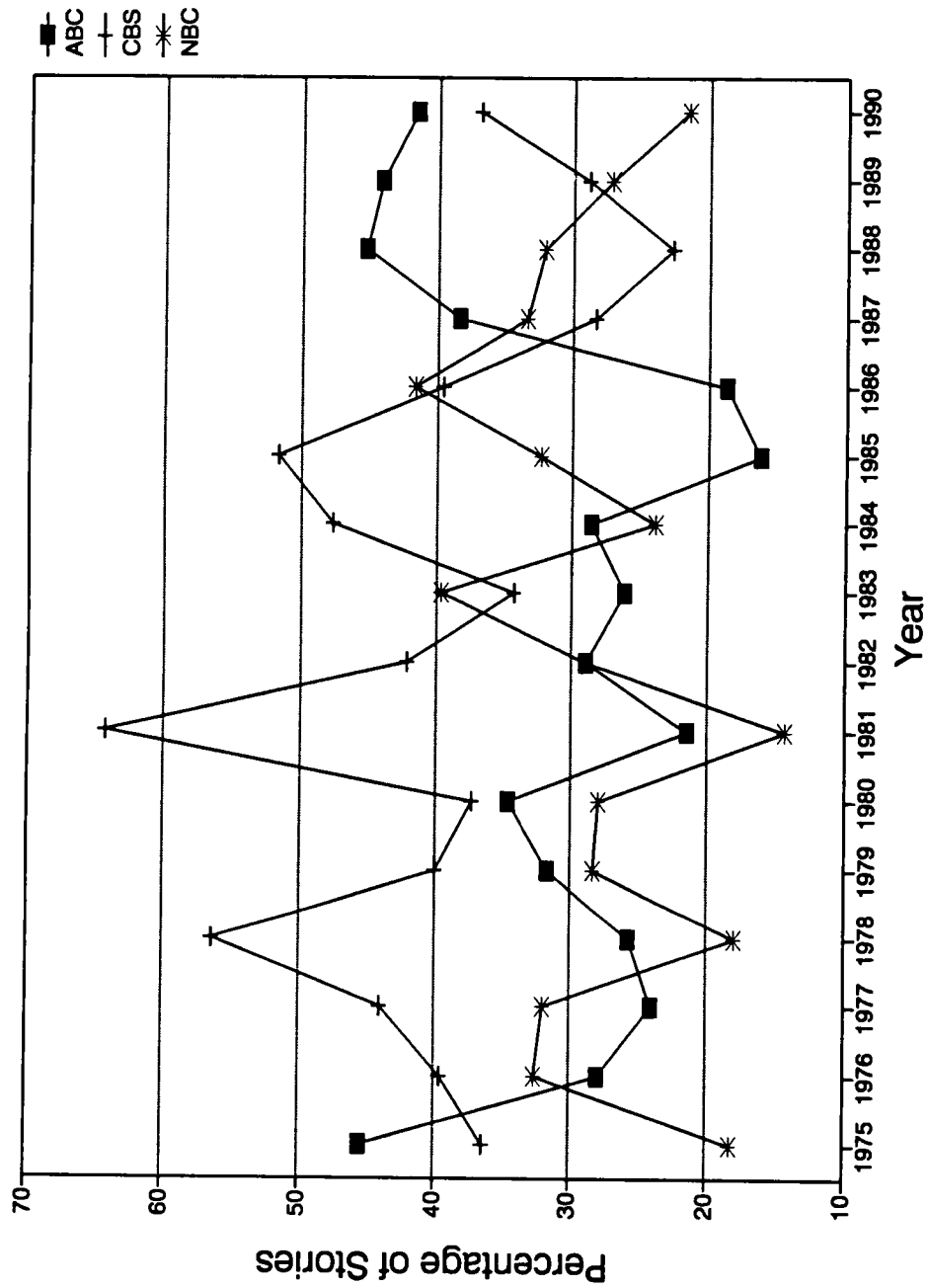


FIGURE 3.3
Waste Stories by Network, 1975-1990

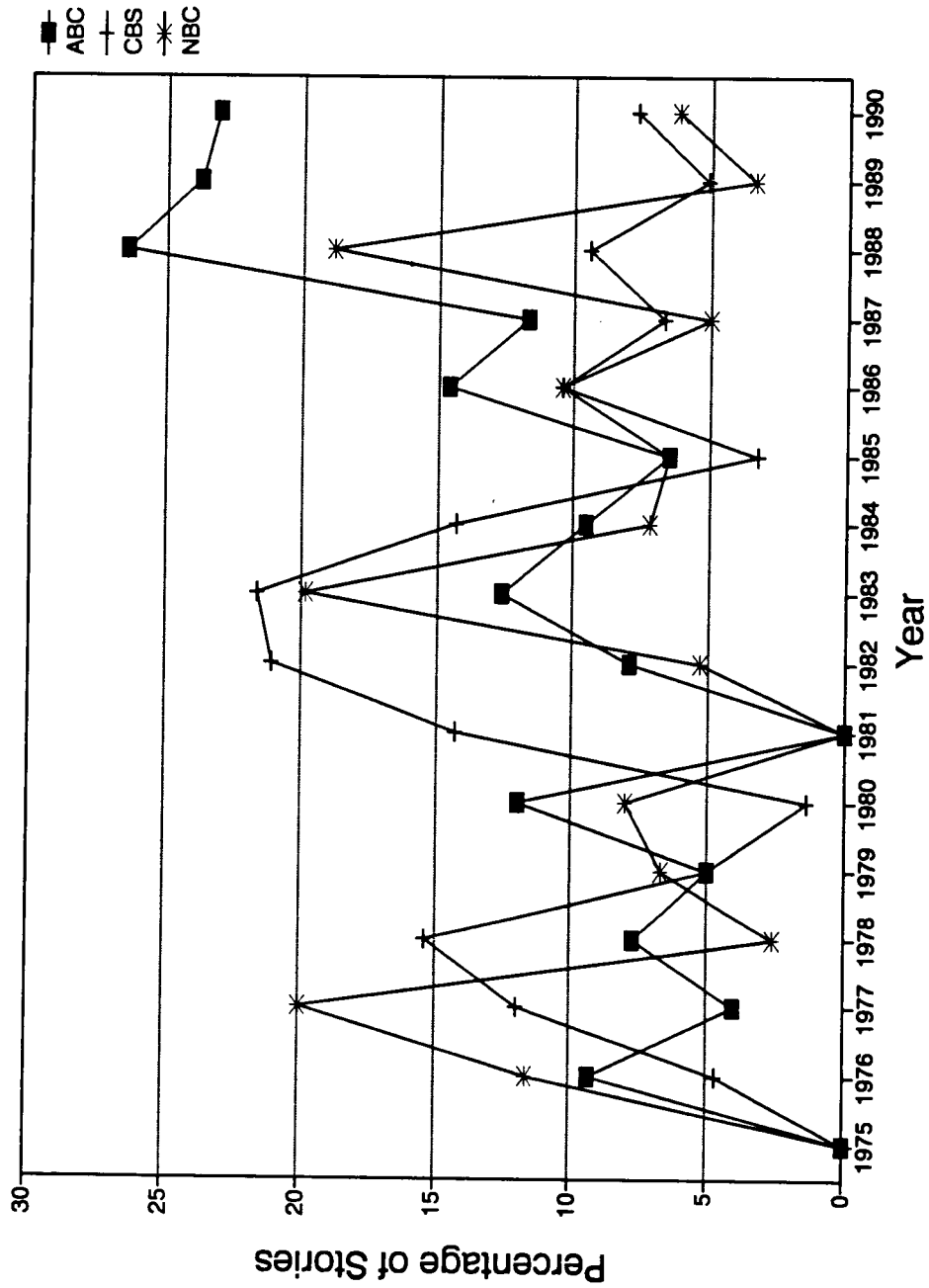


FIGURE 3.4
Prominence of Waste Stories by Network, 1975-1990

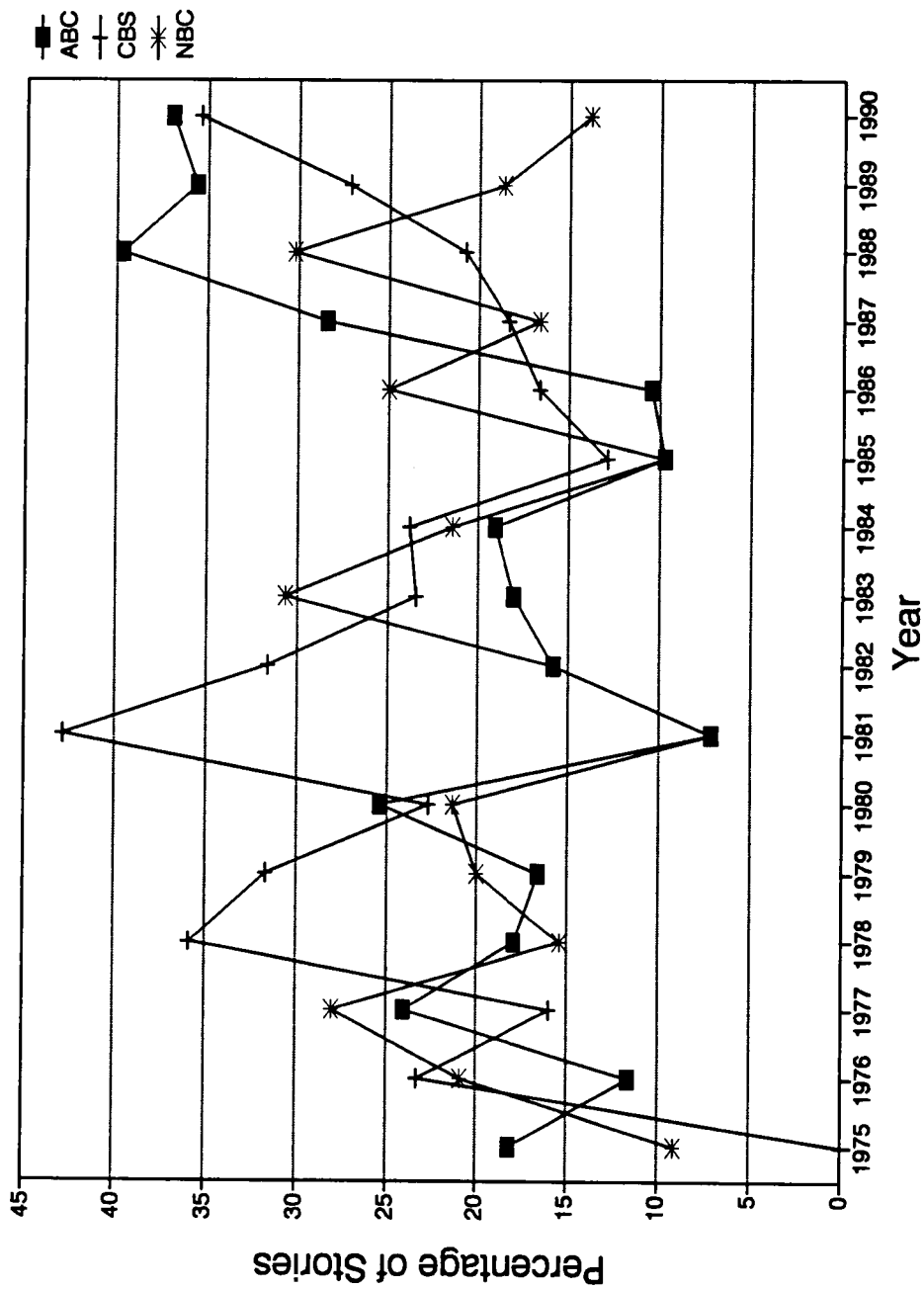


FIGURE 3.5
Complex Waste Stories by Network, 1975-1990

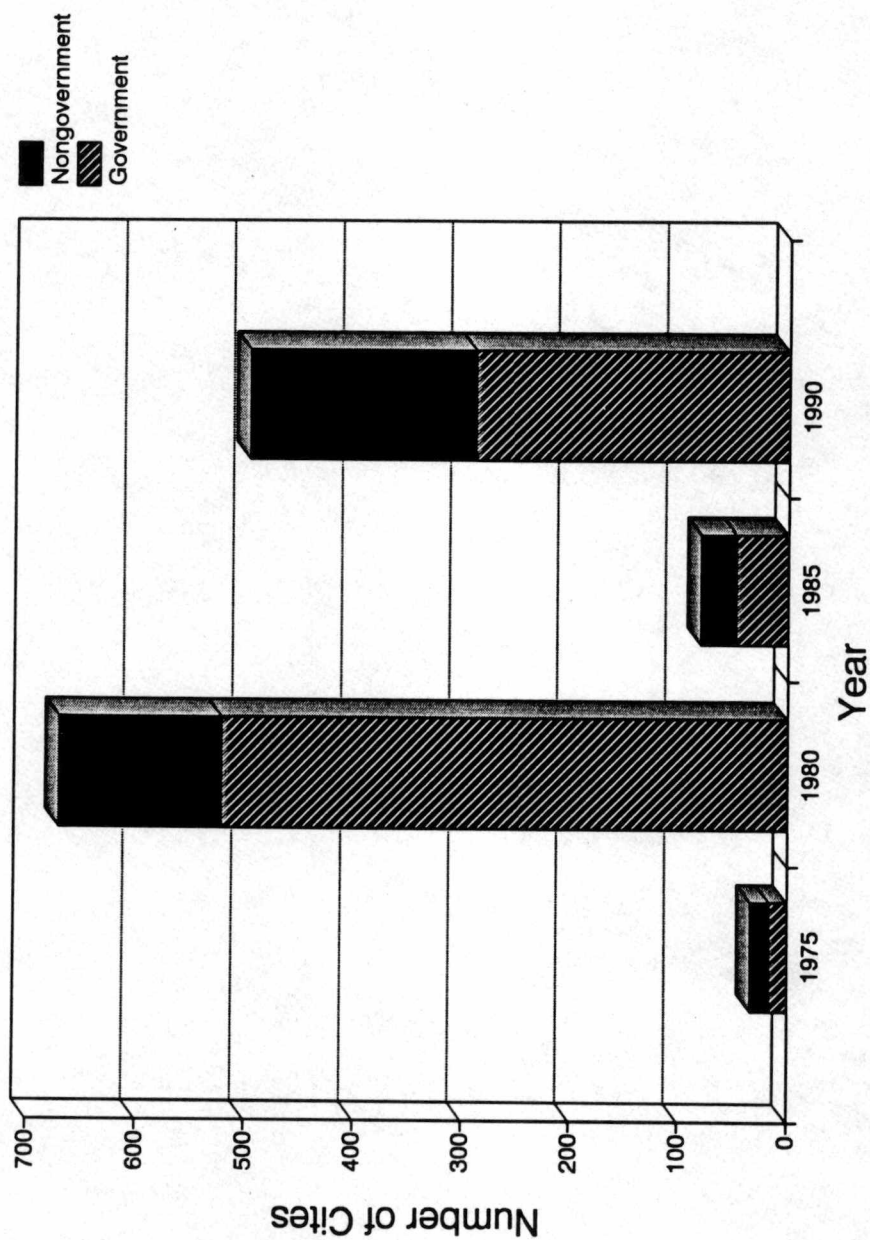


FIGURE 4.1
Government and Nongovernment Cities in Environmental
Coverage, 1975-1990

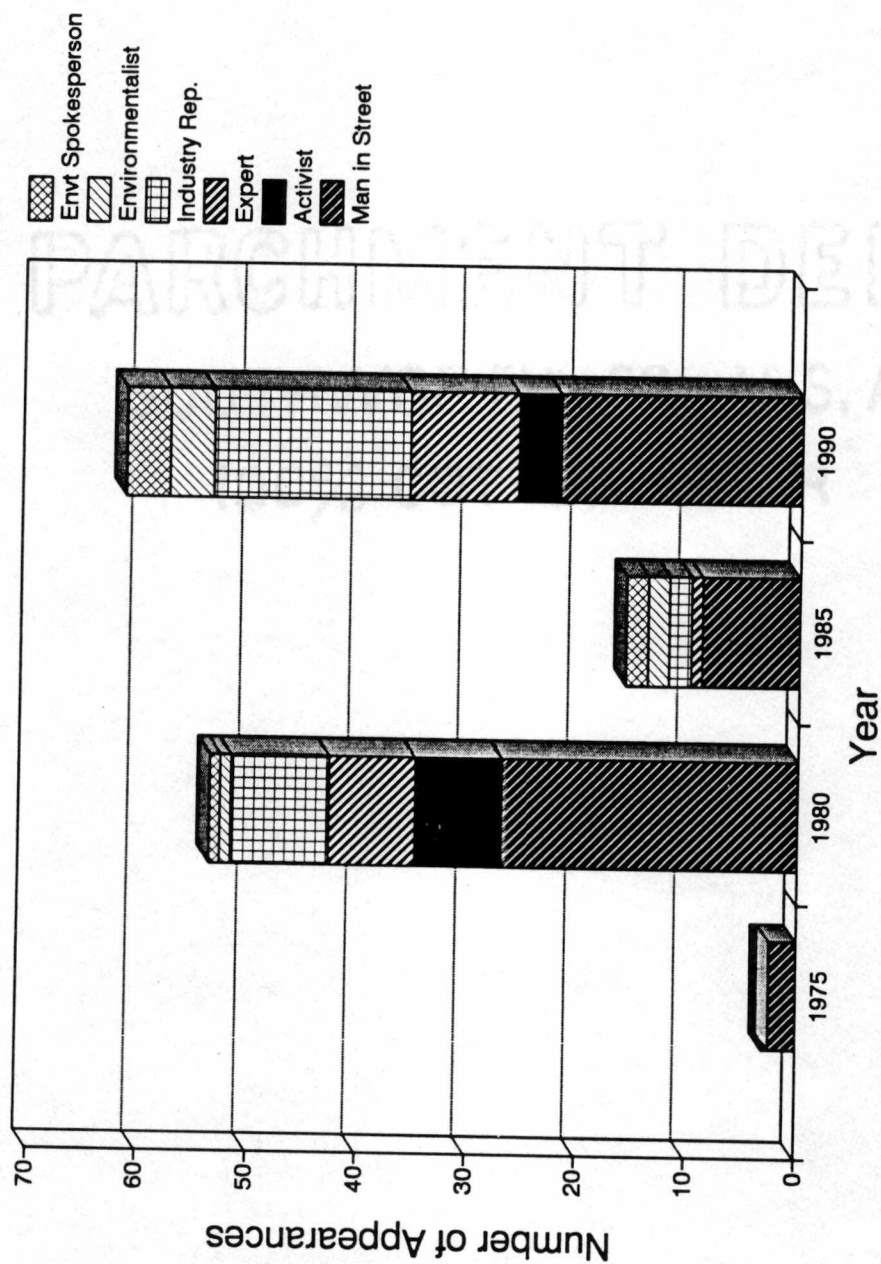


FIGURE 4.2
Appearances by Nongovernmental Persons, 1975-1990

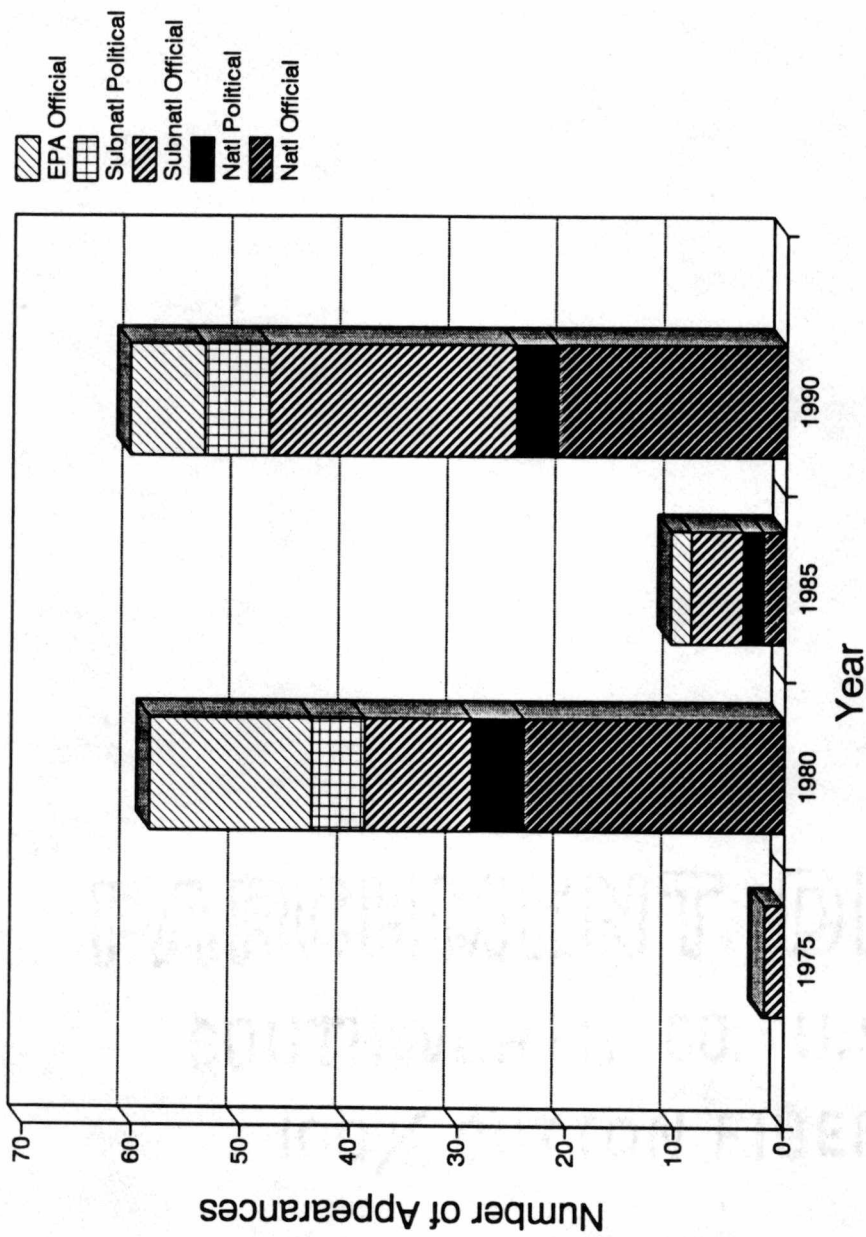


FIGURE 4.3
Appearances by Government Officials, 1975-1990

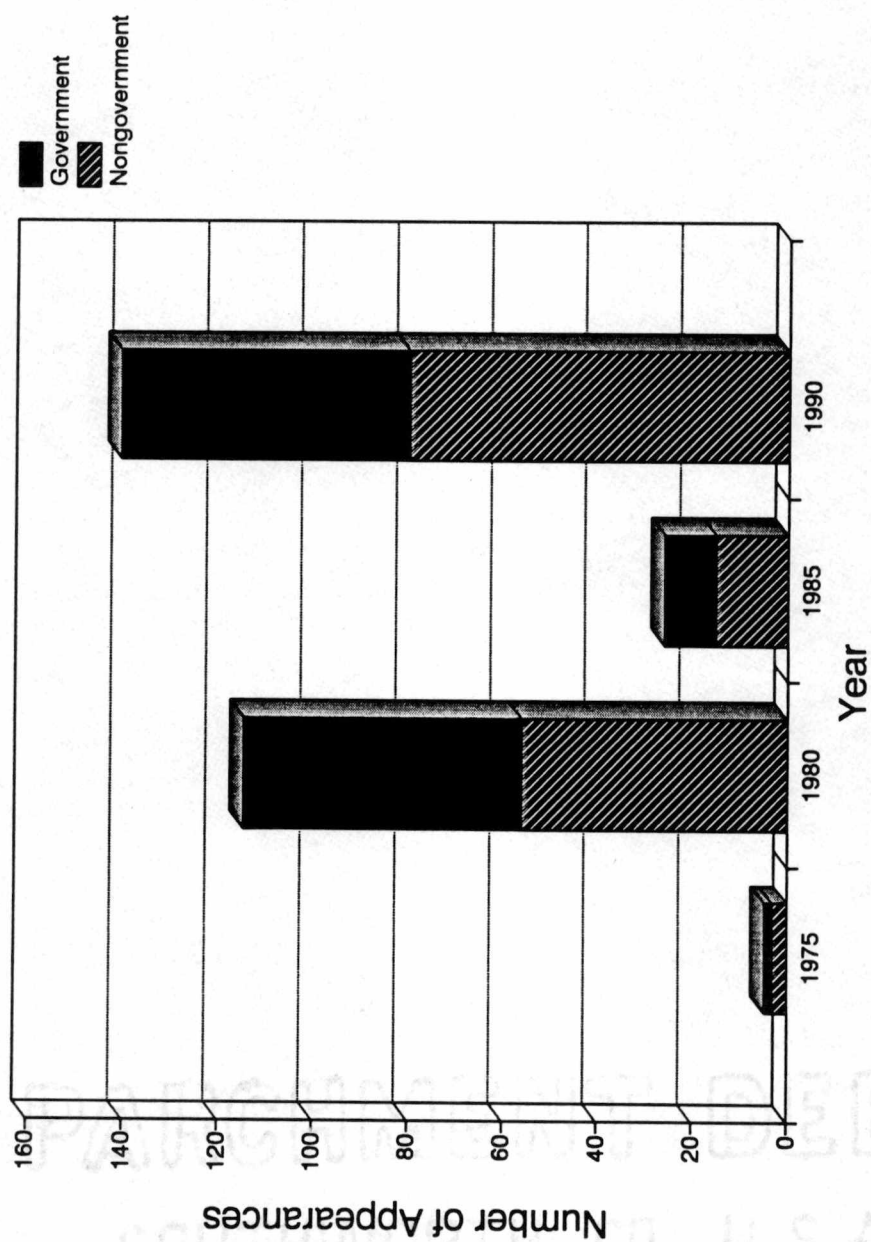


FIGURE 4.4
Appearances by Government Officials and Nongovernment Persons, 1975-1990

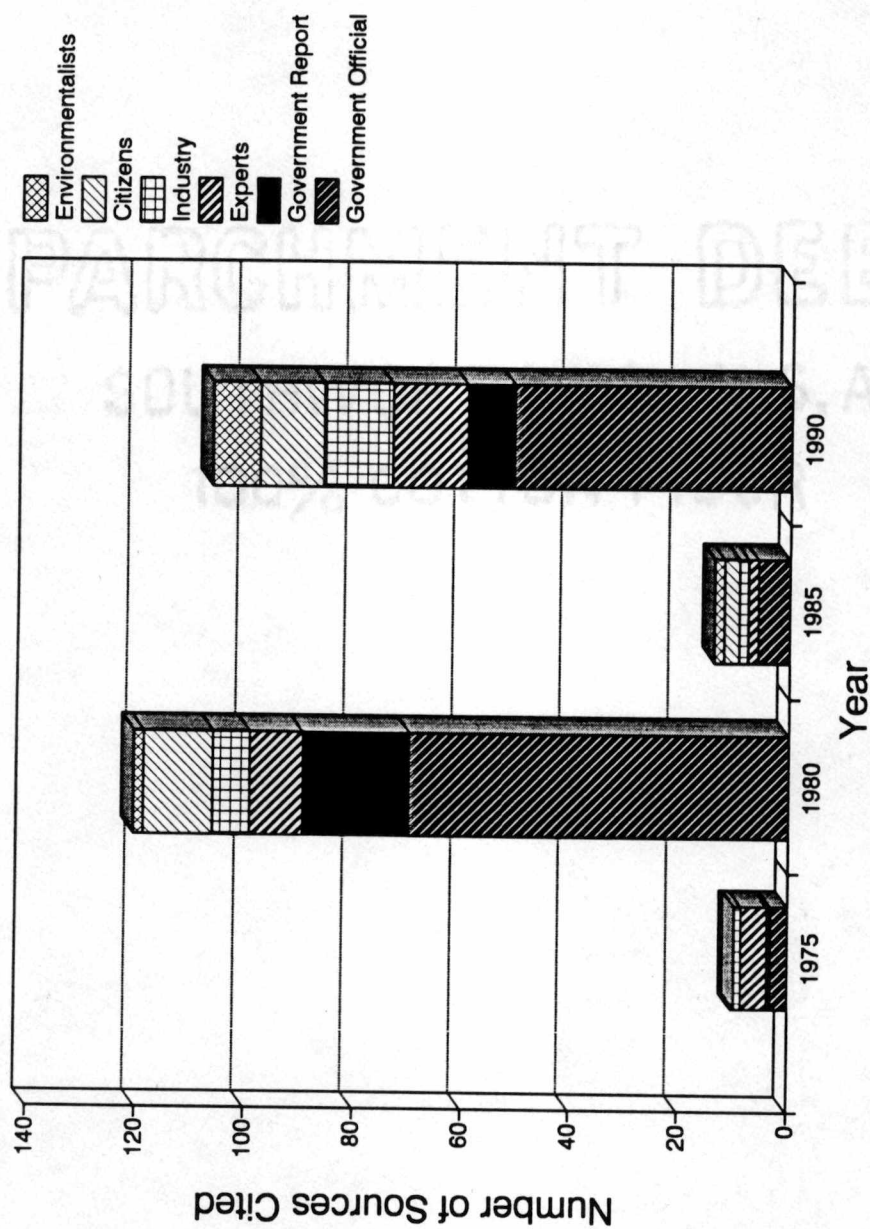


FIGURE 4.5
Sources of Information, 1975-1990

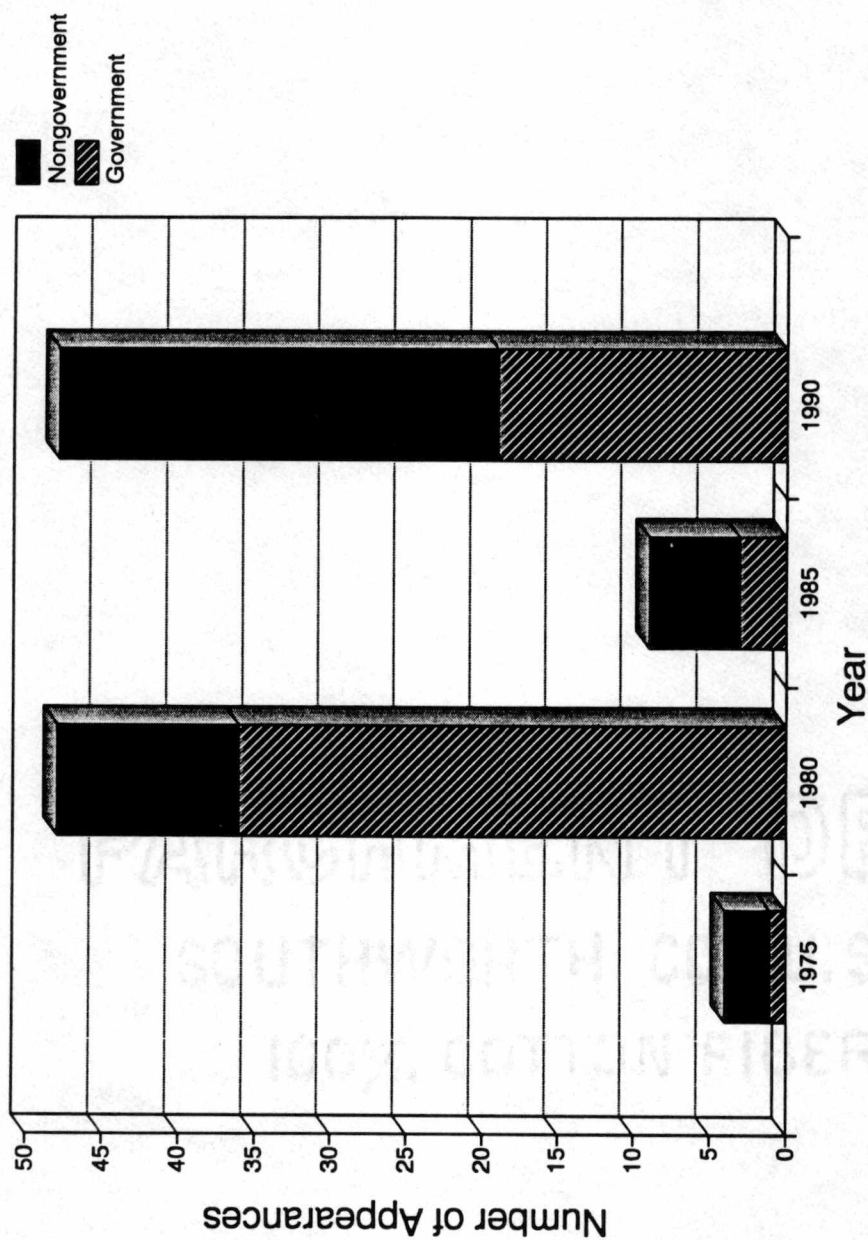


FIGURE 4.6
Government and Nongovernment Sources of Information, 1975-1990

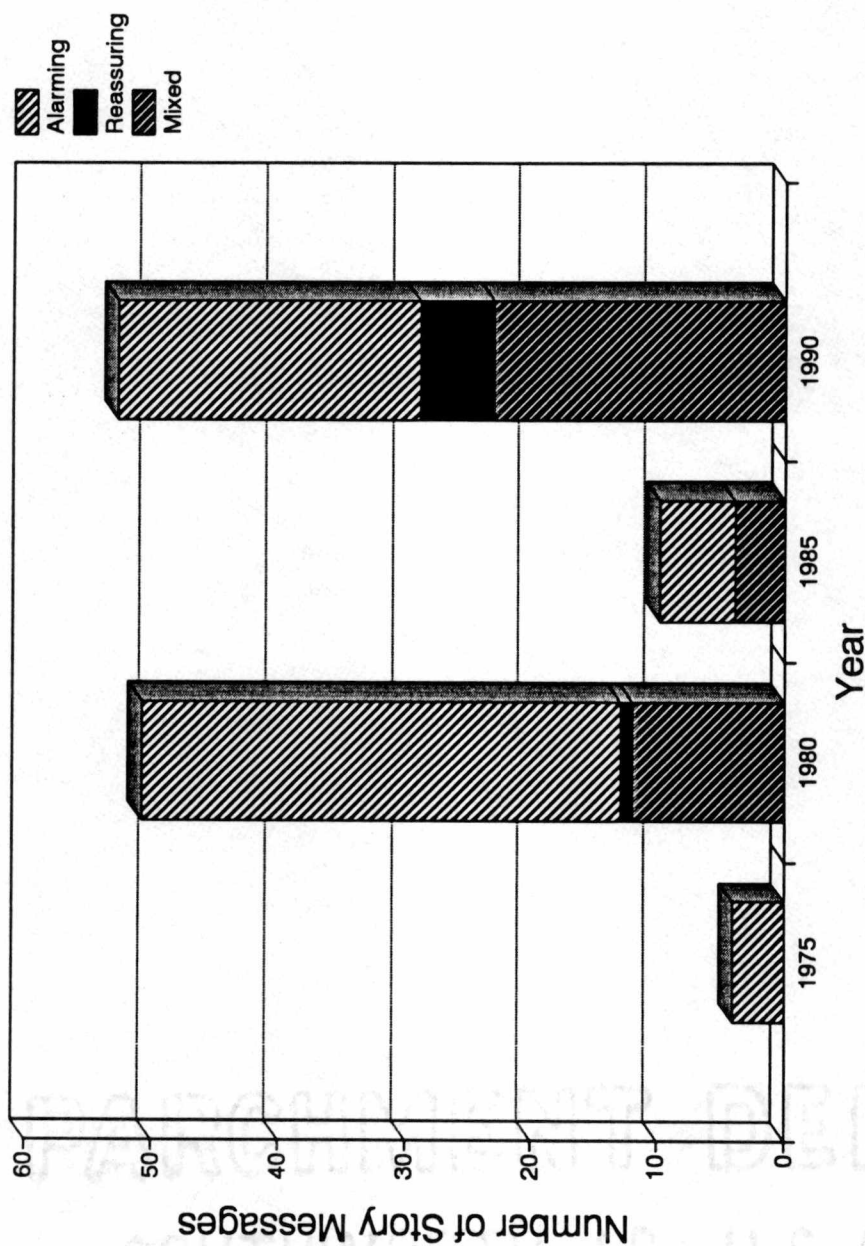


FIGURE 4.7
The Use of Story Messages, 1975-1990

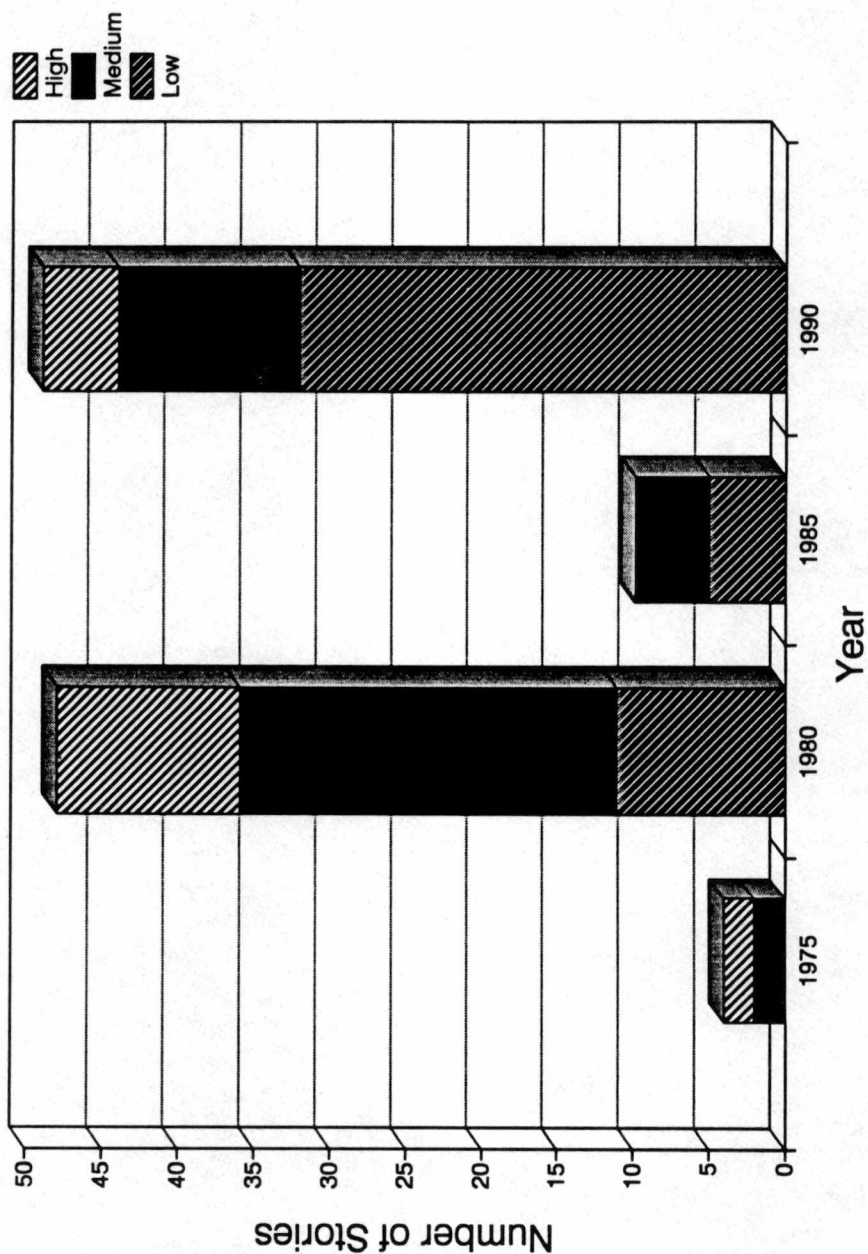


FIGURE 4.8
The Drama Level of Coverage, 1975-1990

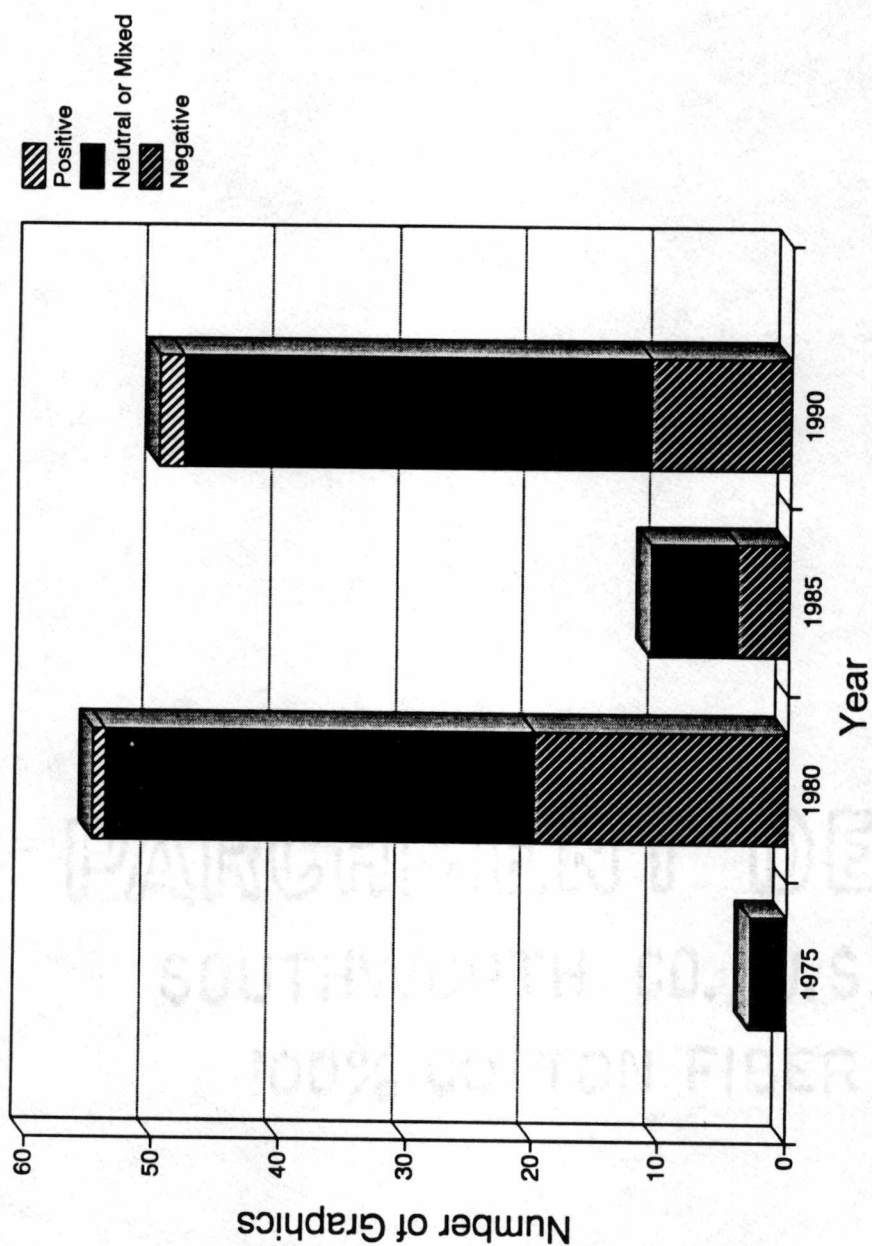


FIGURE 4.9
The Use of Graphics, 1975-1990

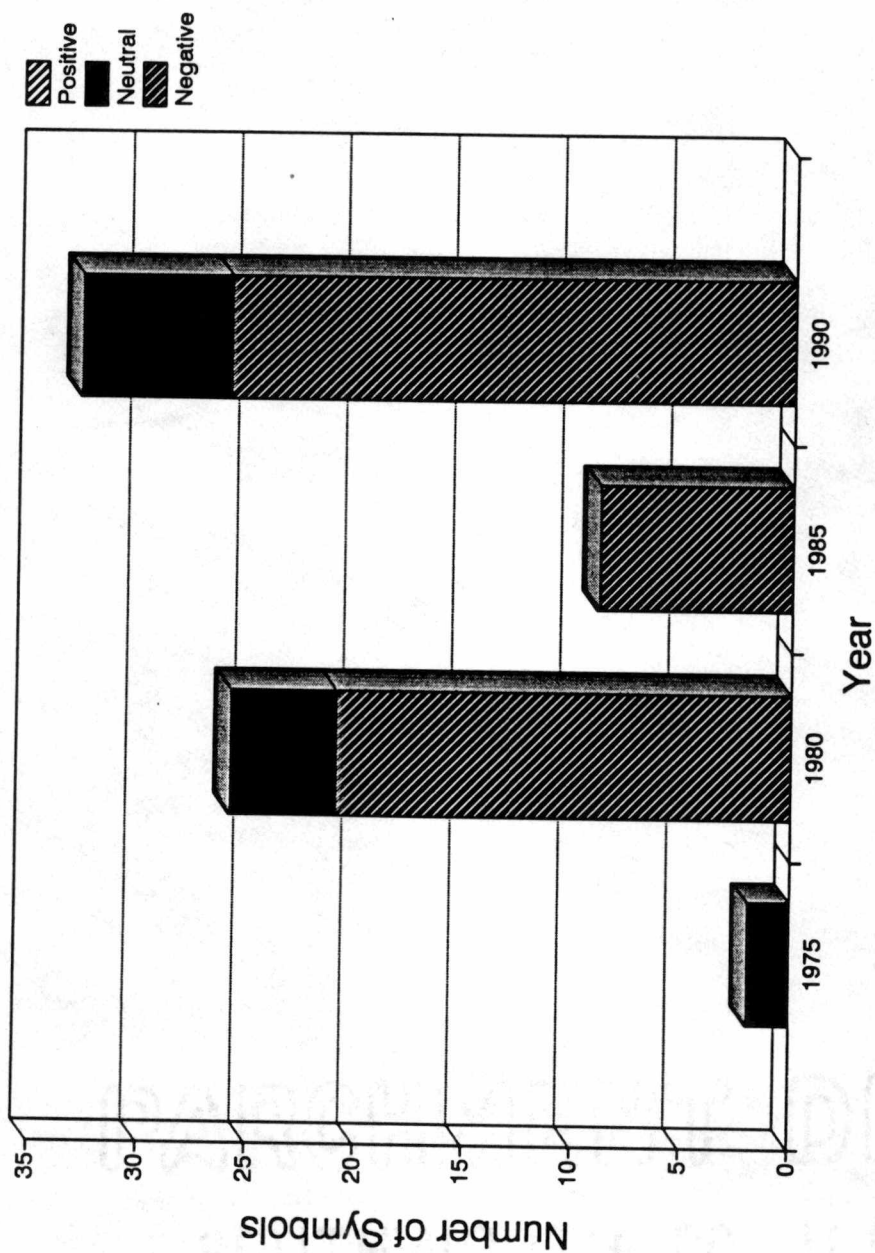


FIGURE 4.10
The Use of Symbols, 1975-1990

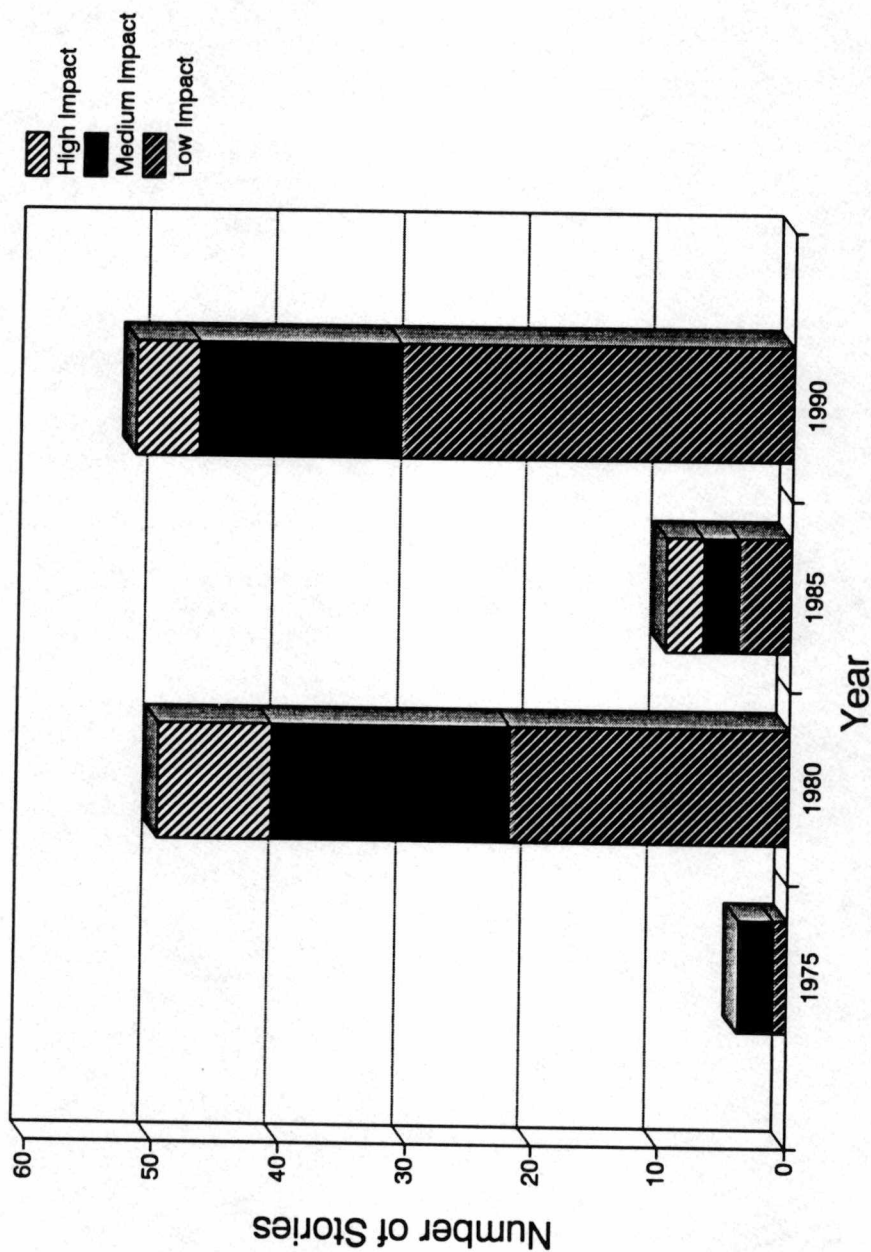


FIGURE 4.11
The Visual Impact of Coverage, 1975-1990

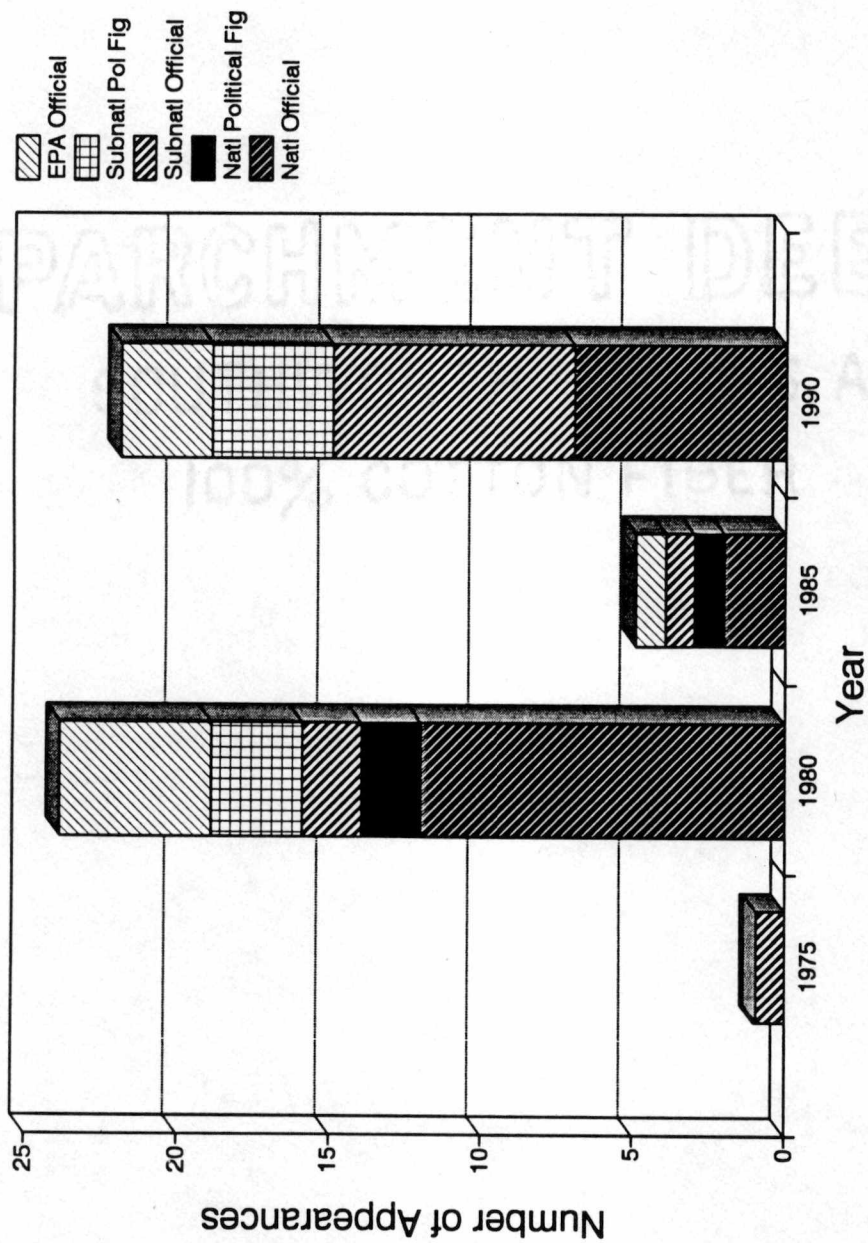


FIGURE 4.12
Appearances by Government Officials for ABC, 1975-1990

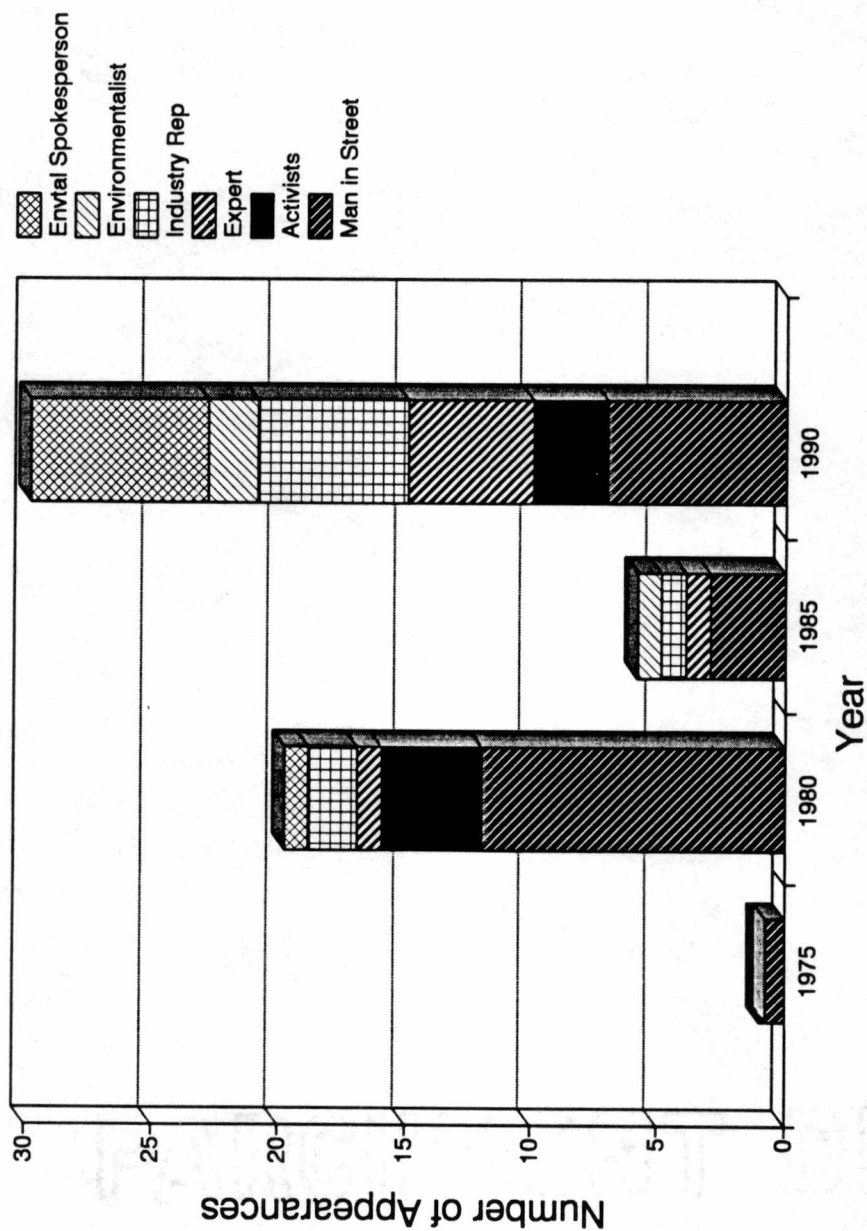


FIGURE 4.13
Appearances by Nongovernment Persons for ABC, 1975-1990

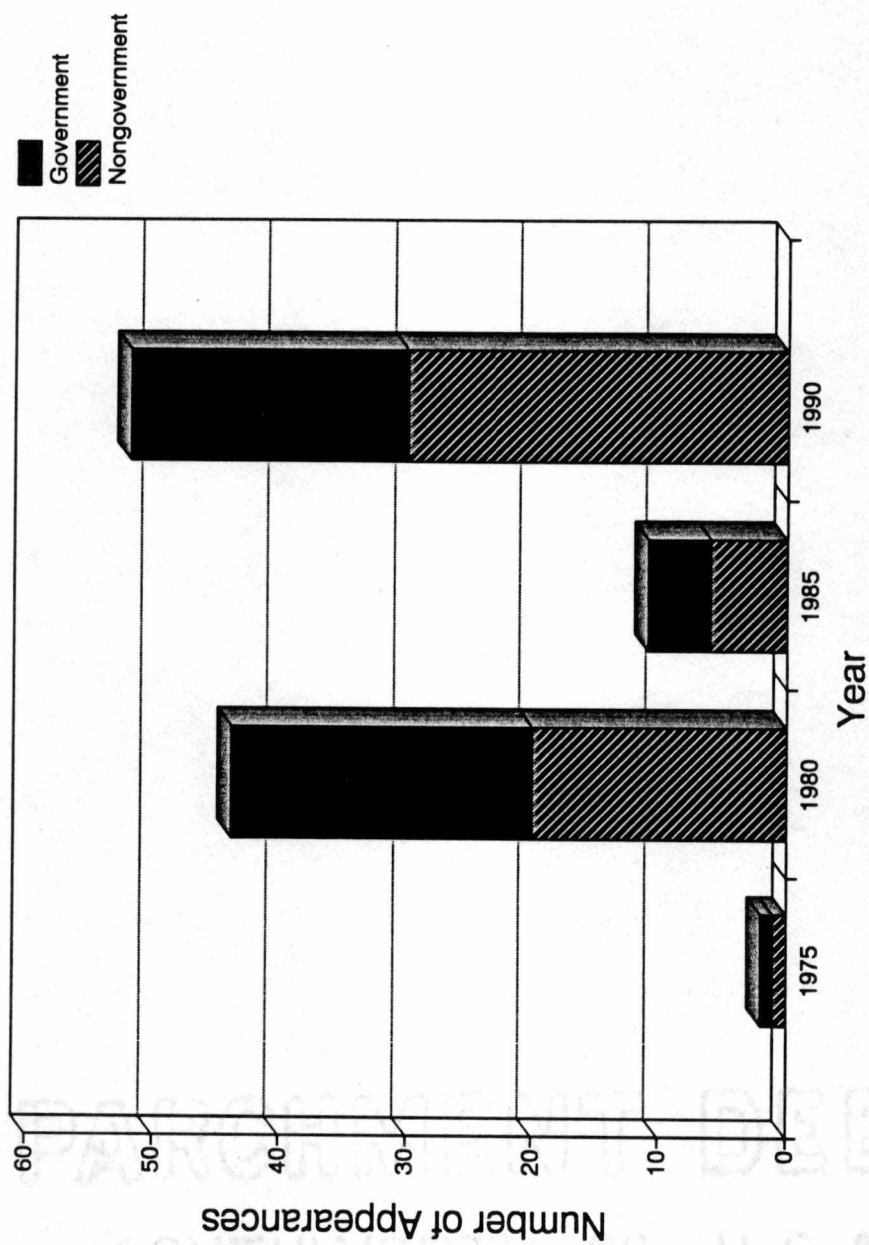


FIGURE 4.14
Government and Nongovernment Appearances by ABC, 1975-1990

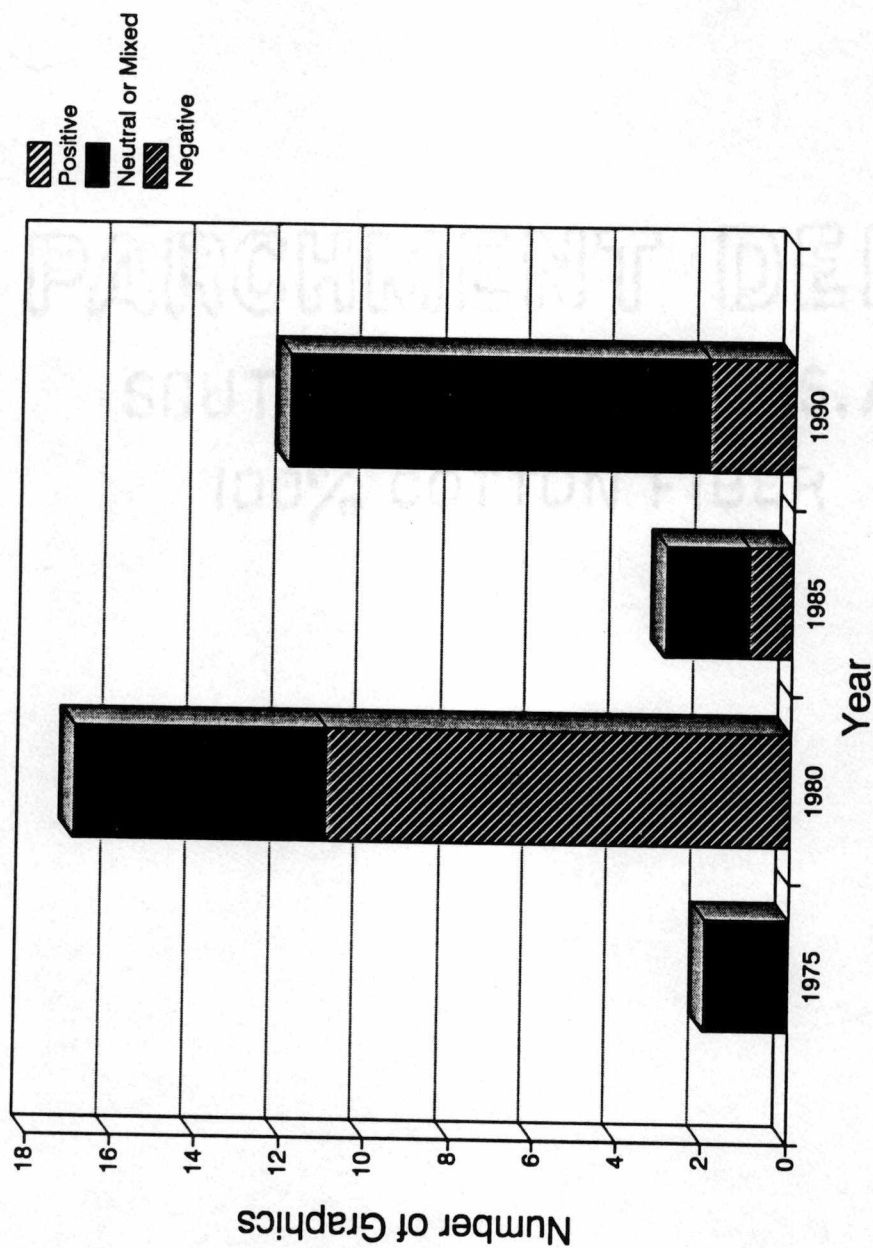


FIGURE 4.15
The Use of Graphics by ABC, 1975-1990

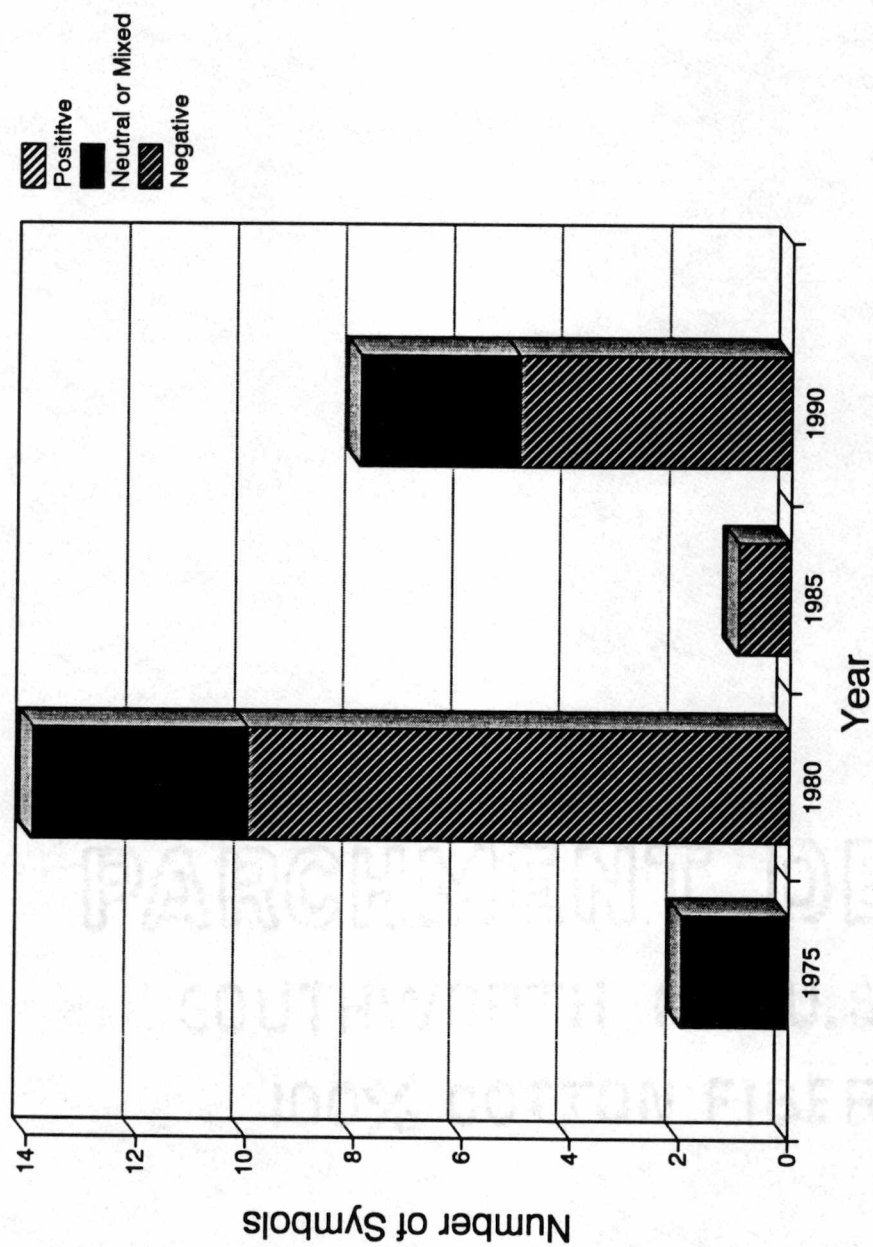


FIGURE 4.16
The Use of Symbols by ABC, 1975-1990

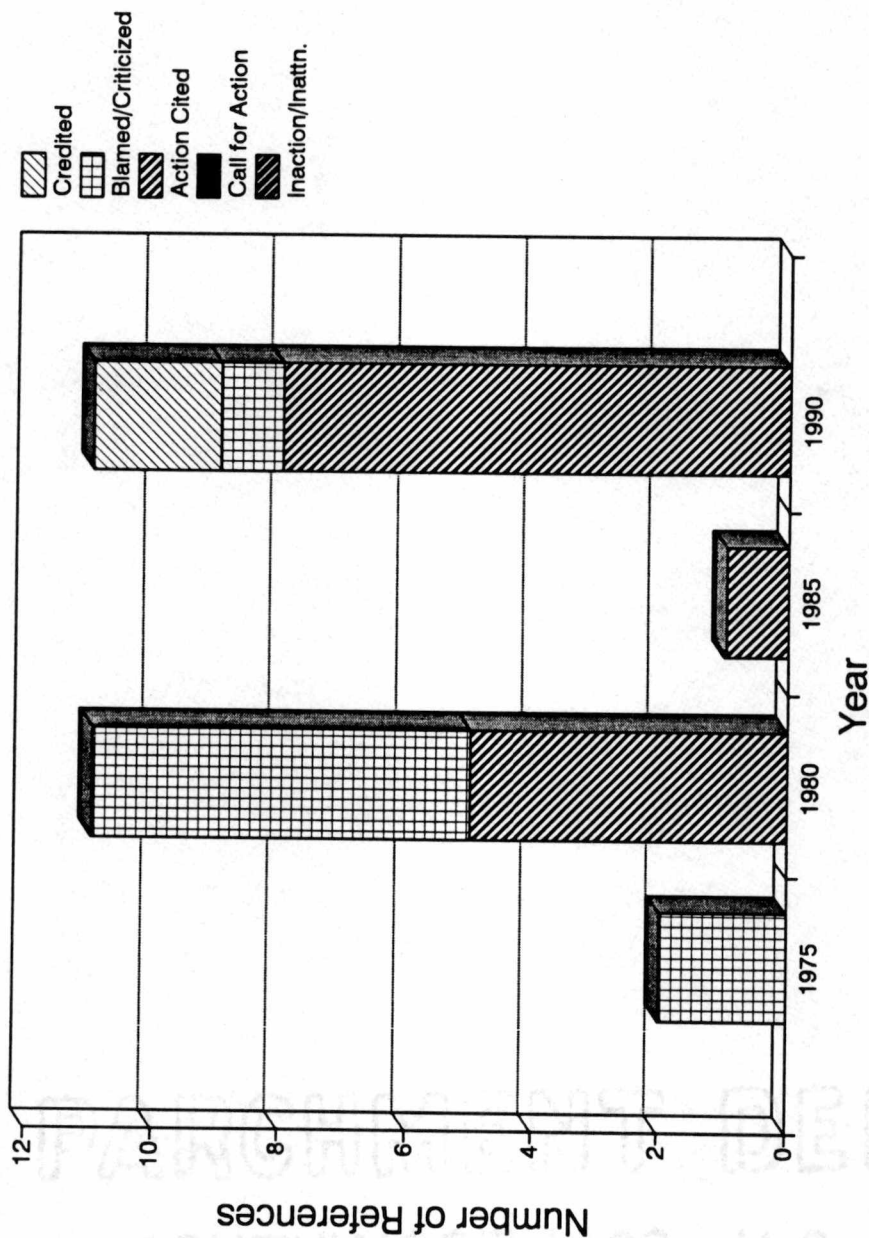


FIGURE 4.17
The Use of Industry Representatives as References by ABC, 1975-1990

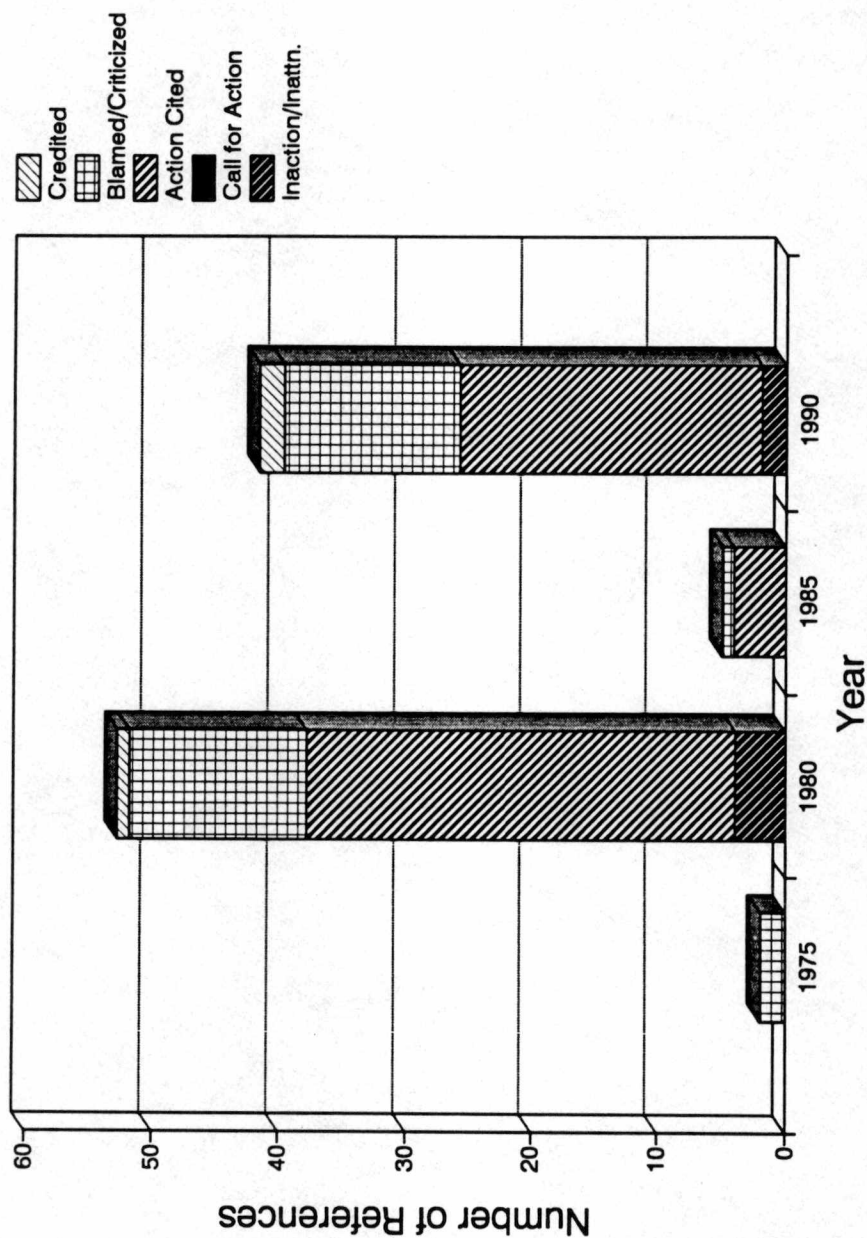


FIGURE 4.18
The Use of National Officials as References by ABC, 1975-1990

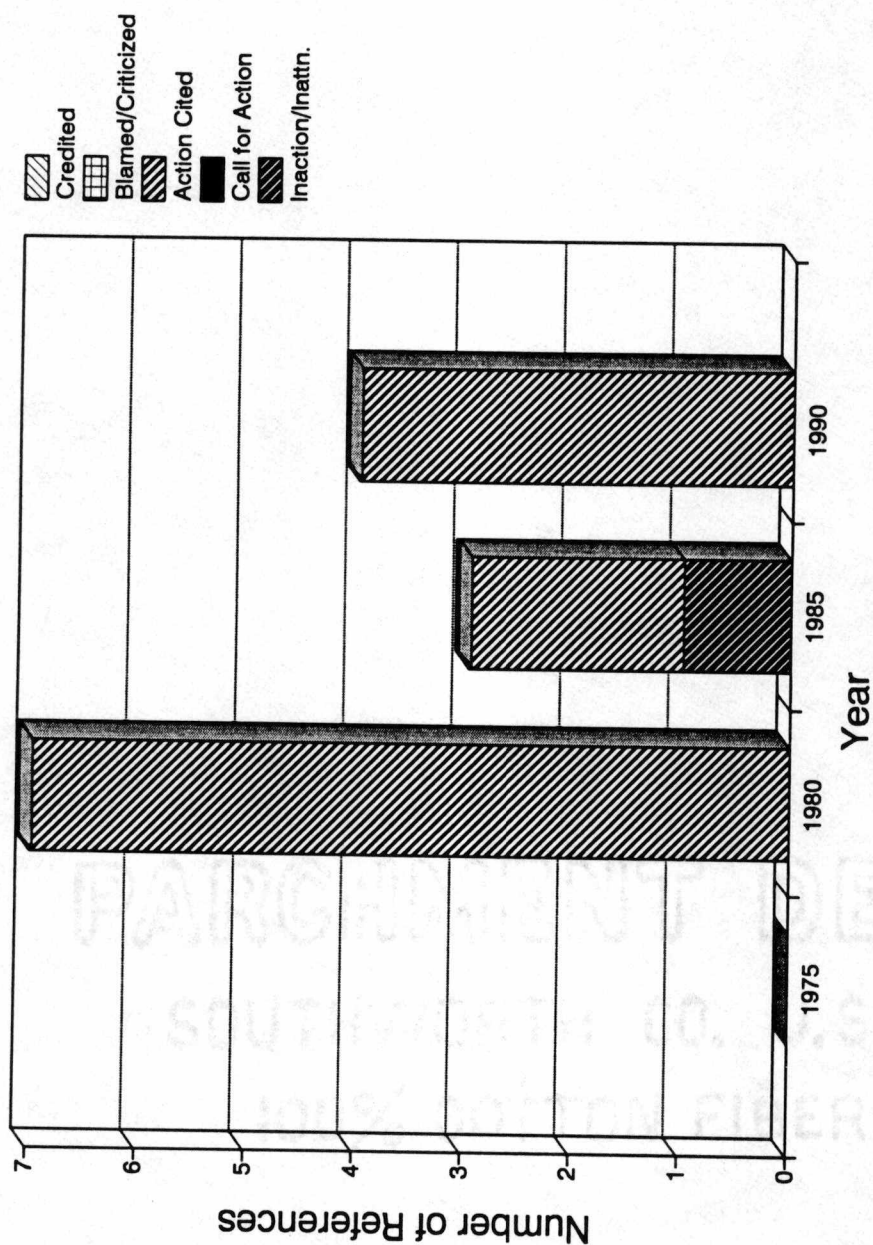


FIGURE 4.19
The Use of EPA Officials as References by ABC, 1975-1990

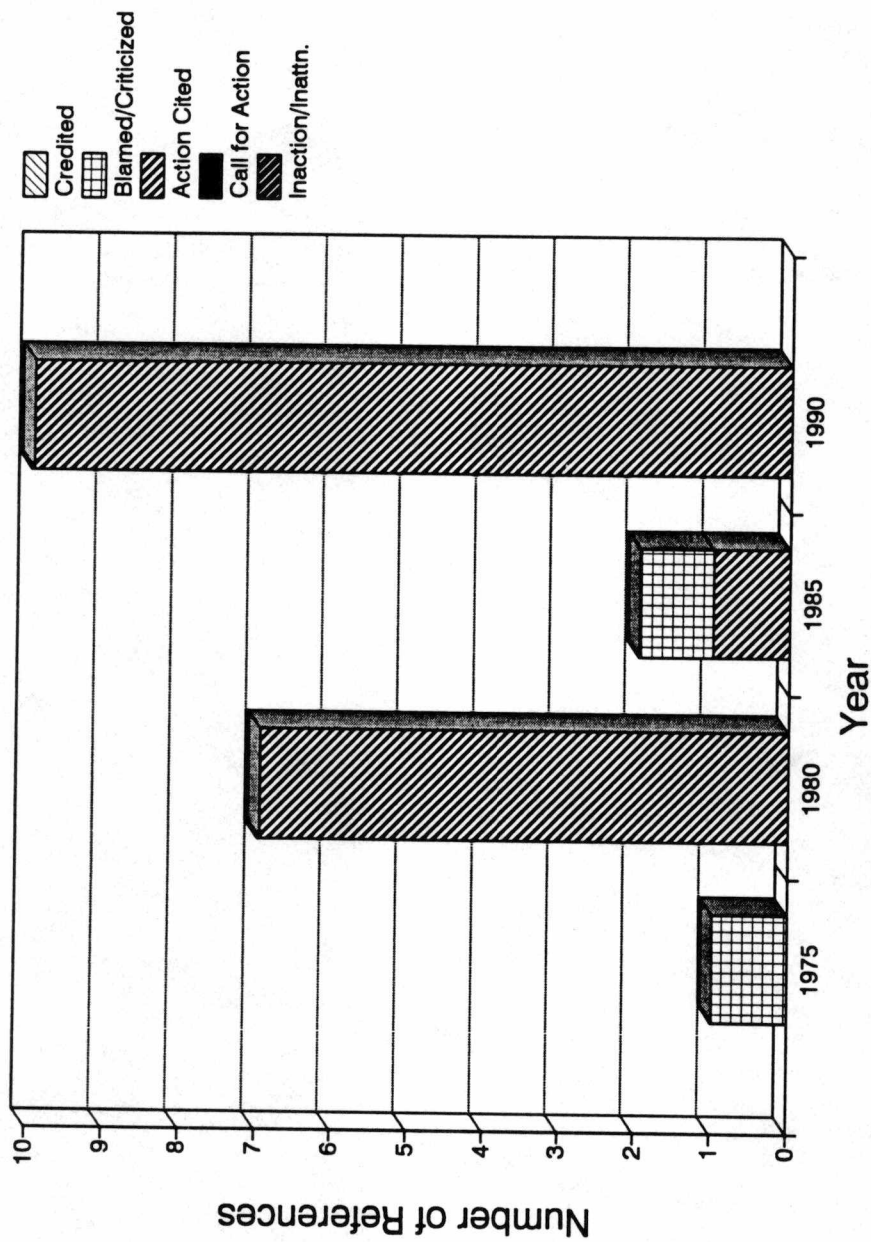


FIGURE 4.20
The Use of Subnational Officials as References by ABC, 1975-1990

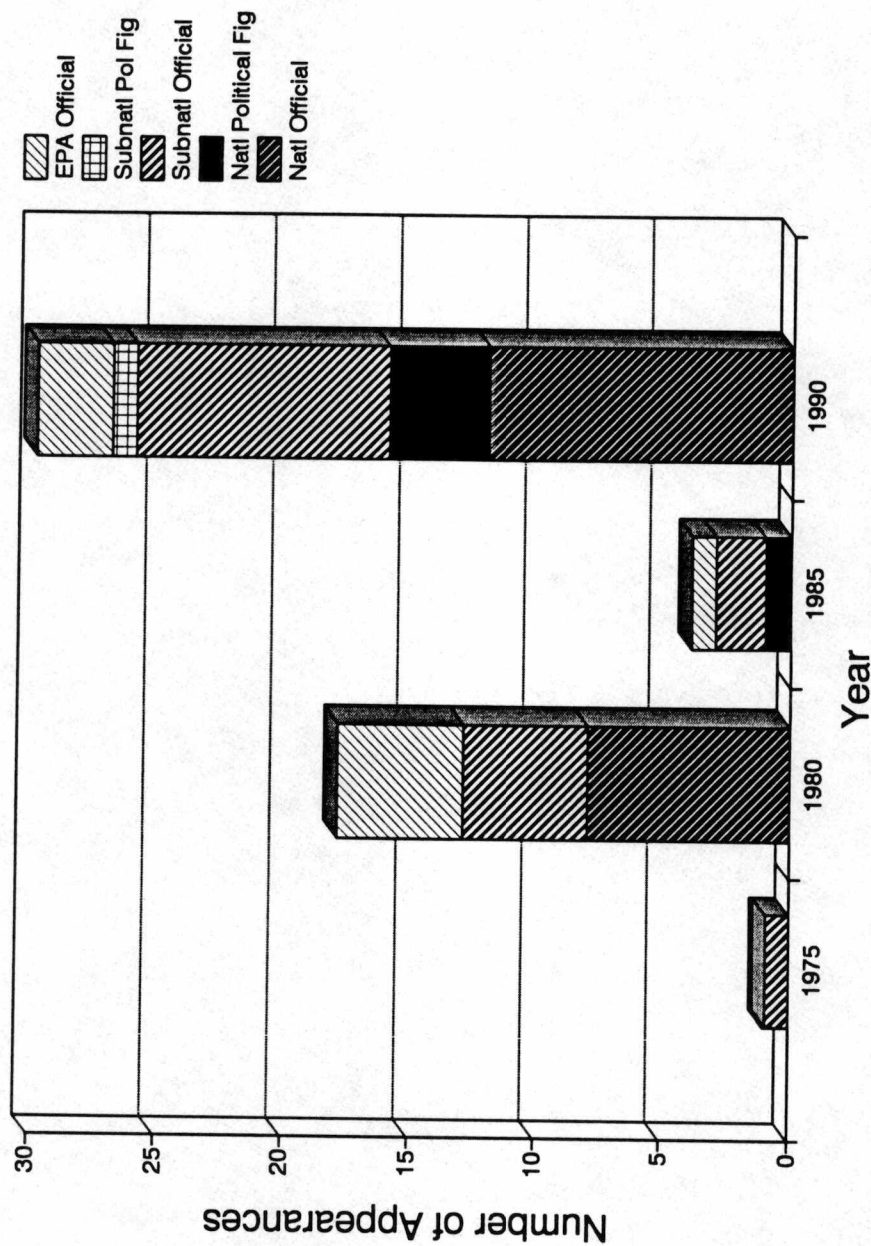


FIGURE 4.21
Appearances by Government Officials for CBS, 1975-1990

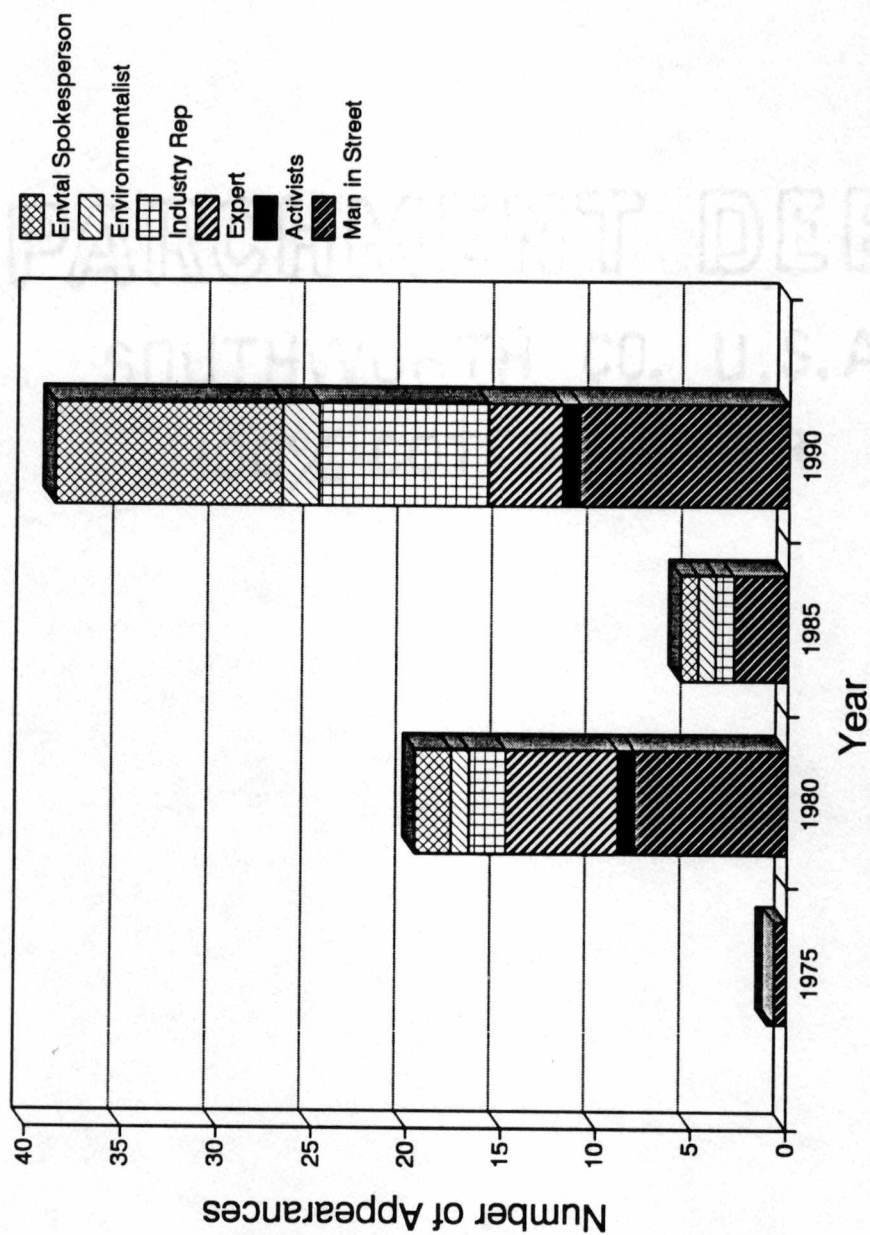


FIGURE 4.22
Appearances by Nongovernment Persons for CBS, 1975-1990

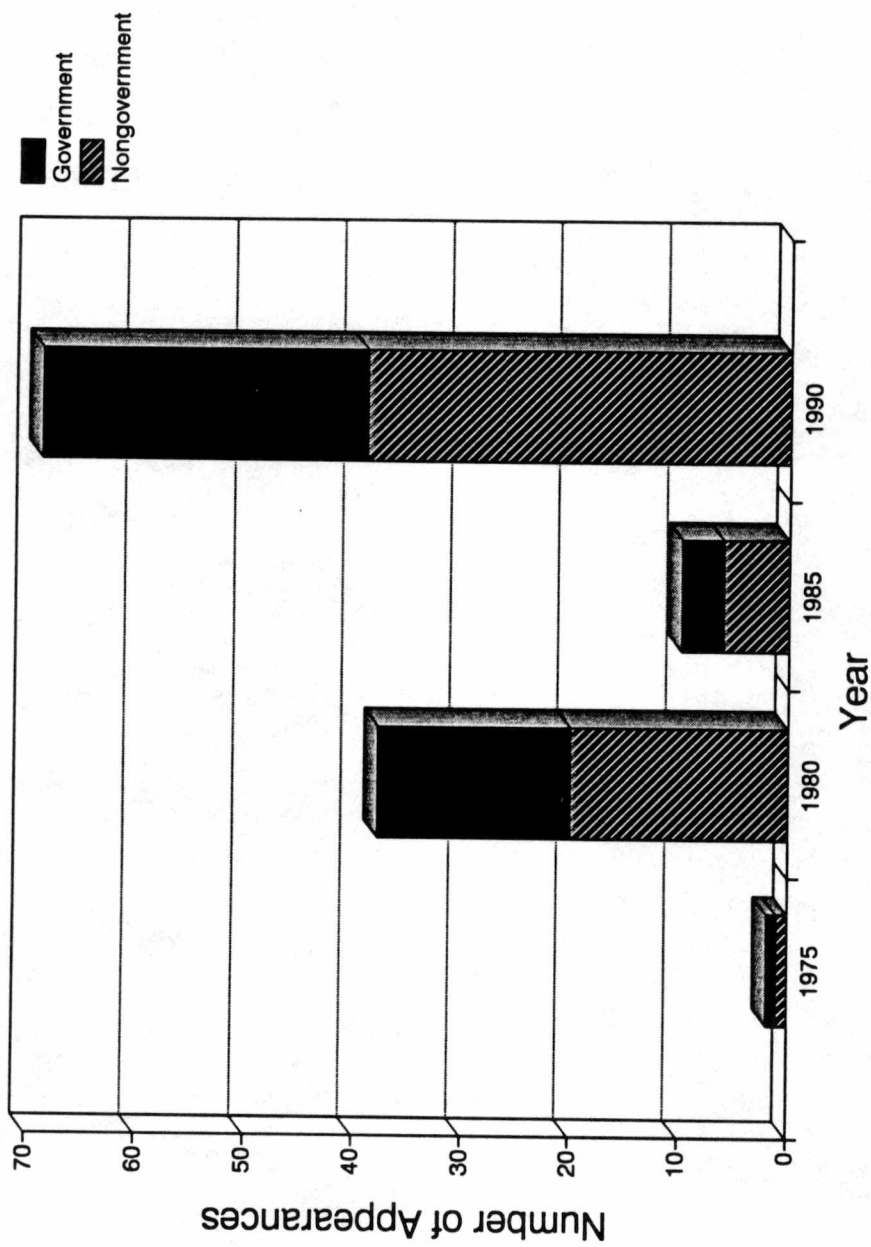


FIGURE 4.23
Government and Nongovernment Appearances by CBS, 1975-1990

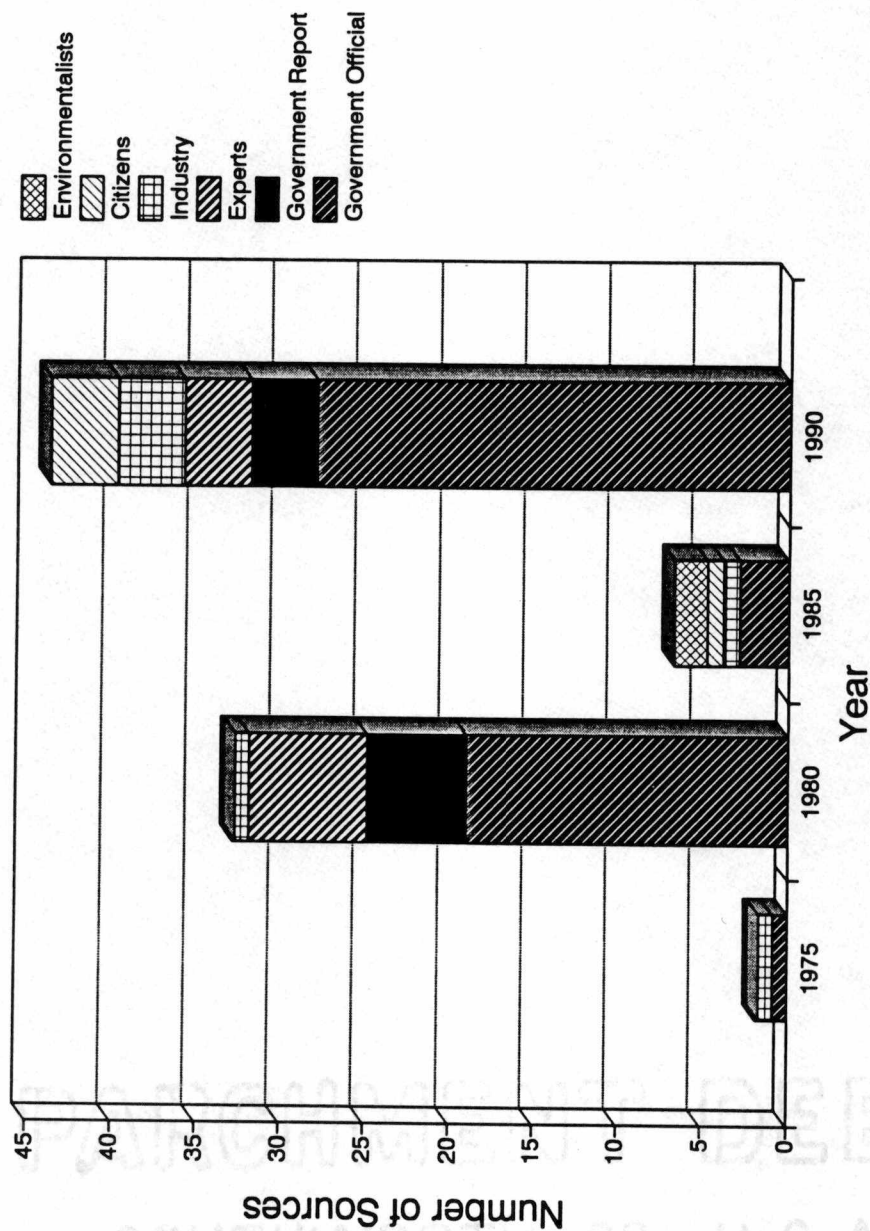


FIGURE 4.24
The Use of Sources by CBS, 1975-1990

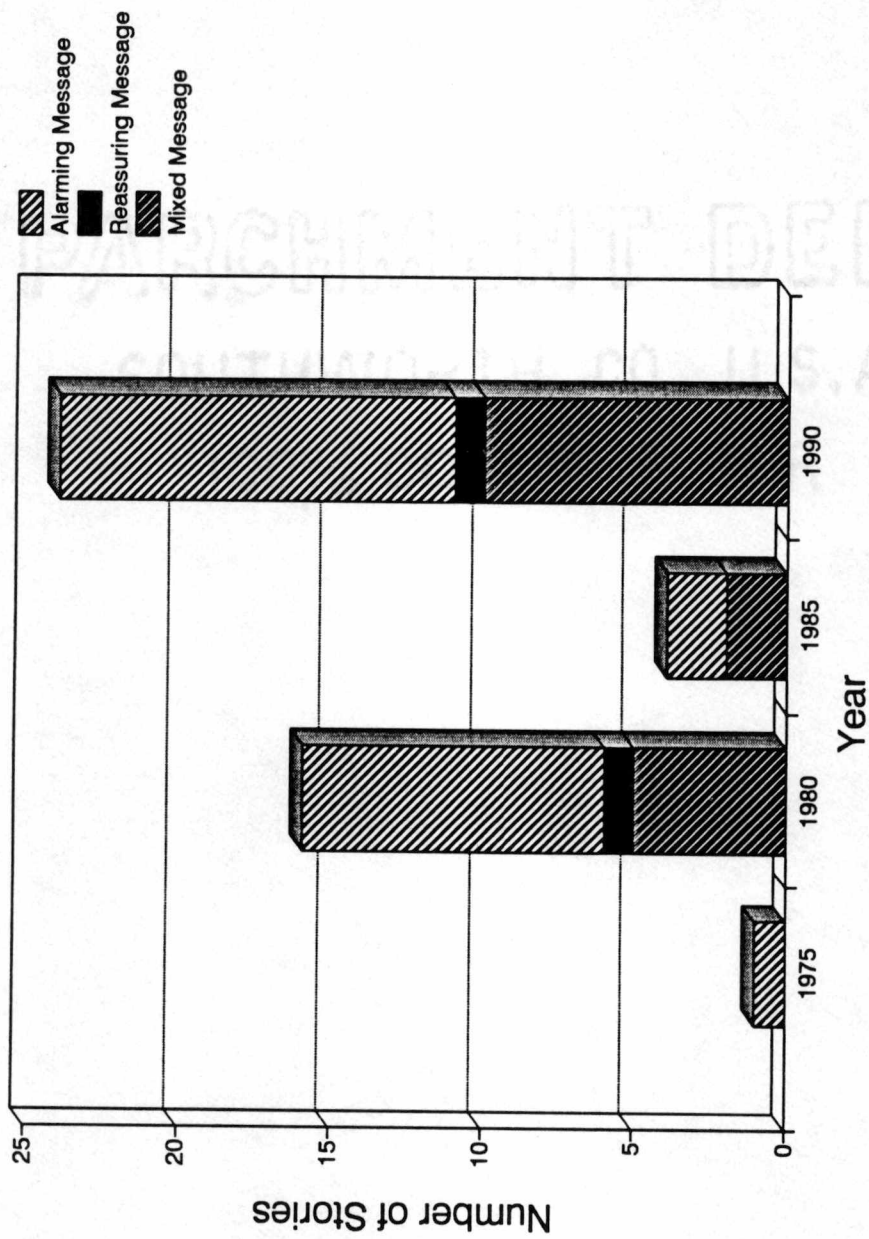


FIGURE 4.25
The Use of Story Message by CBS, 1975-1990

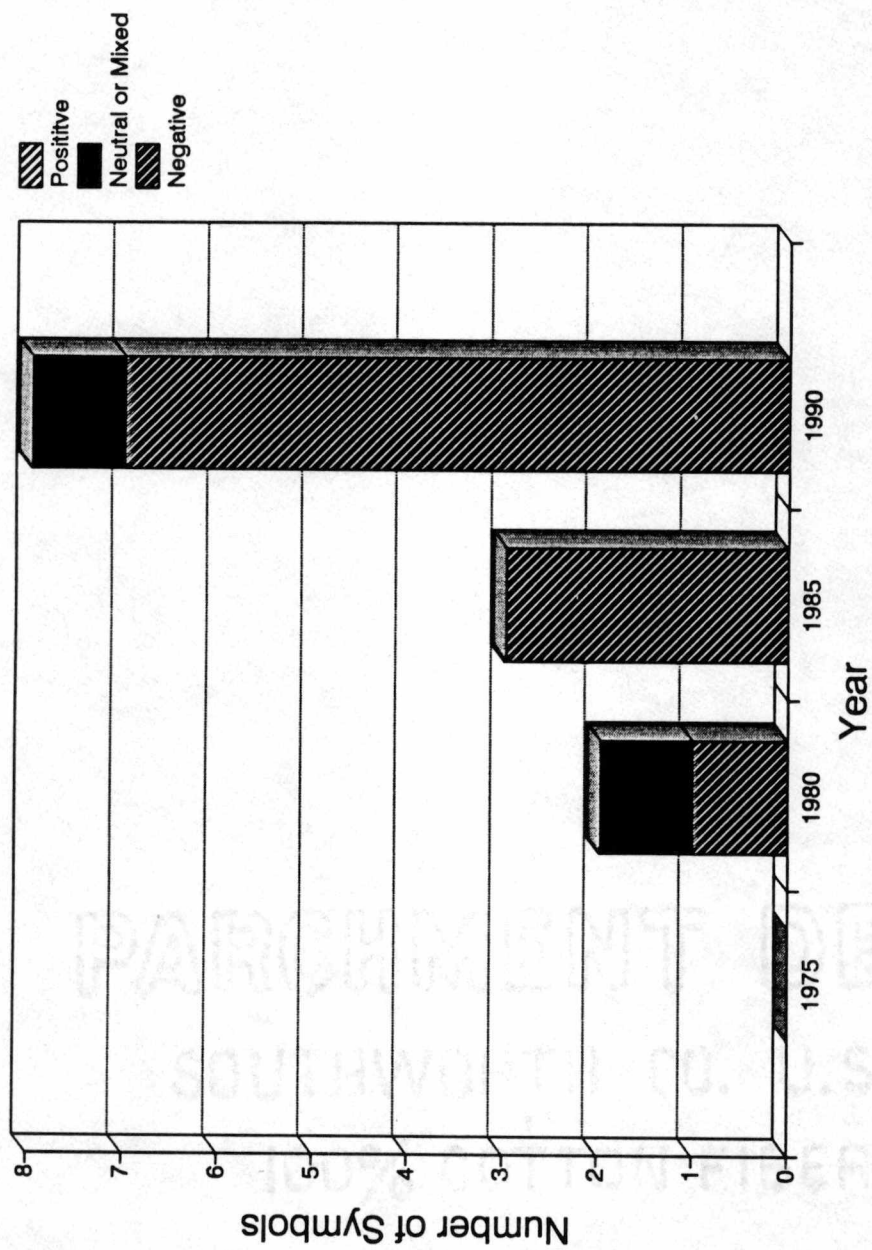


FIGURE 4.26
The Use of Symbols by CBS, 1975-1990

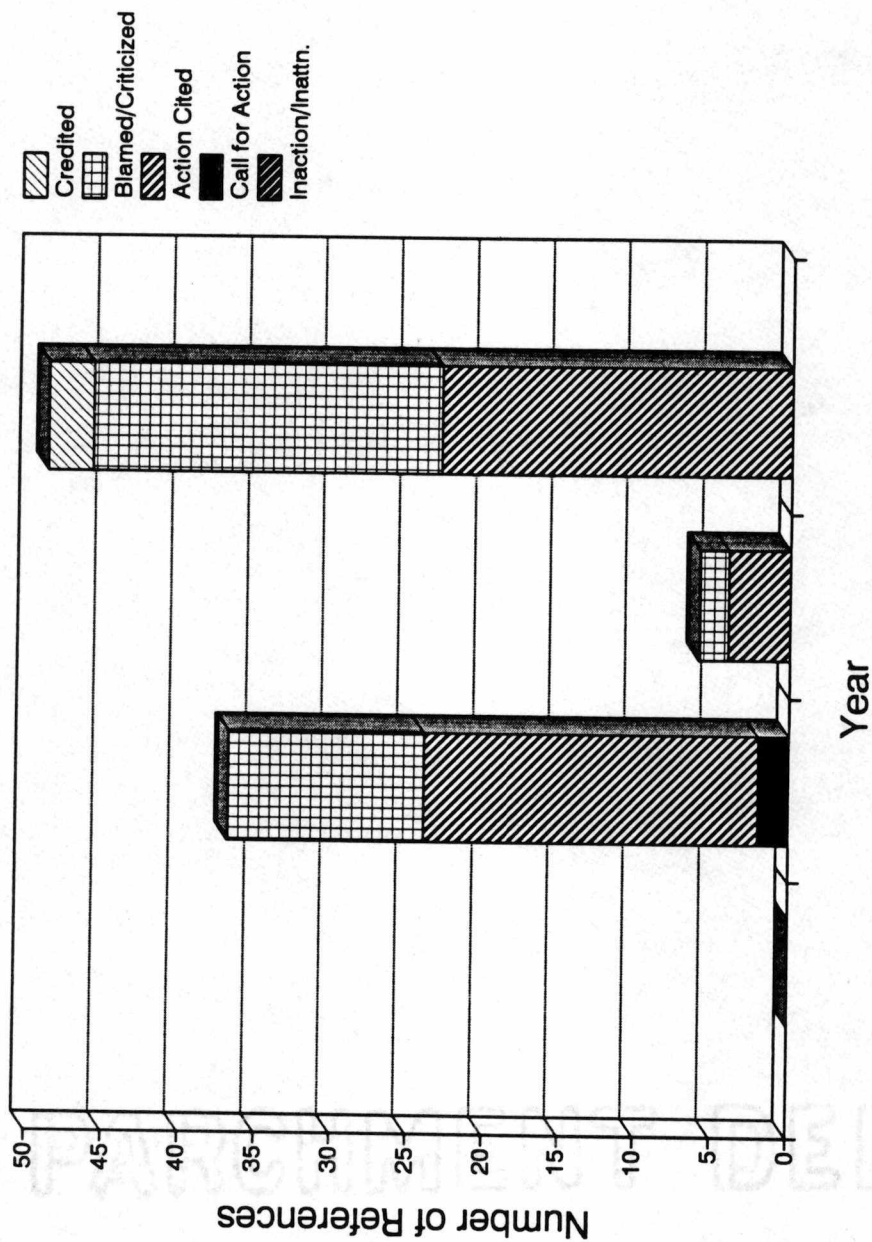


FIGURE 4.27

The Use of National Officials as References by CBS, 1975-1990

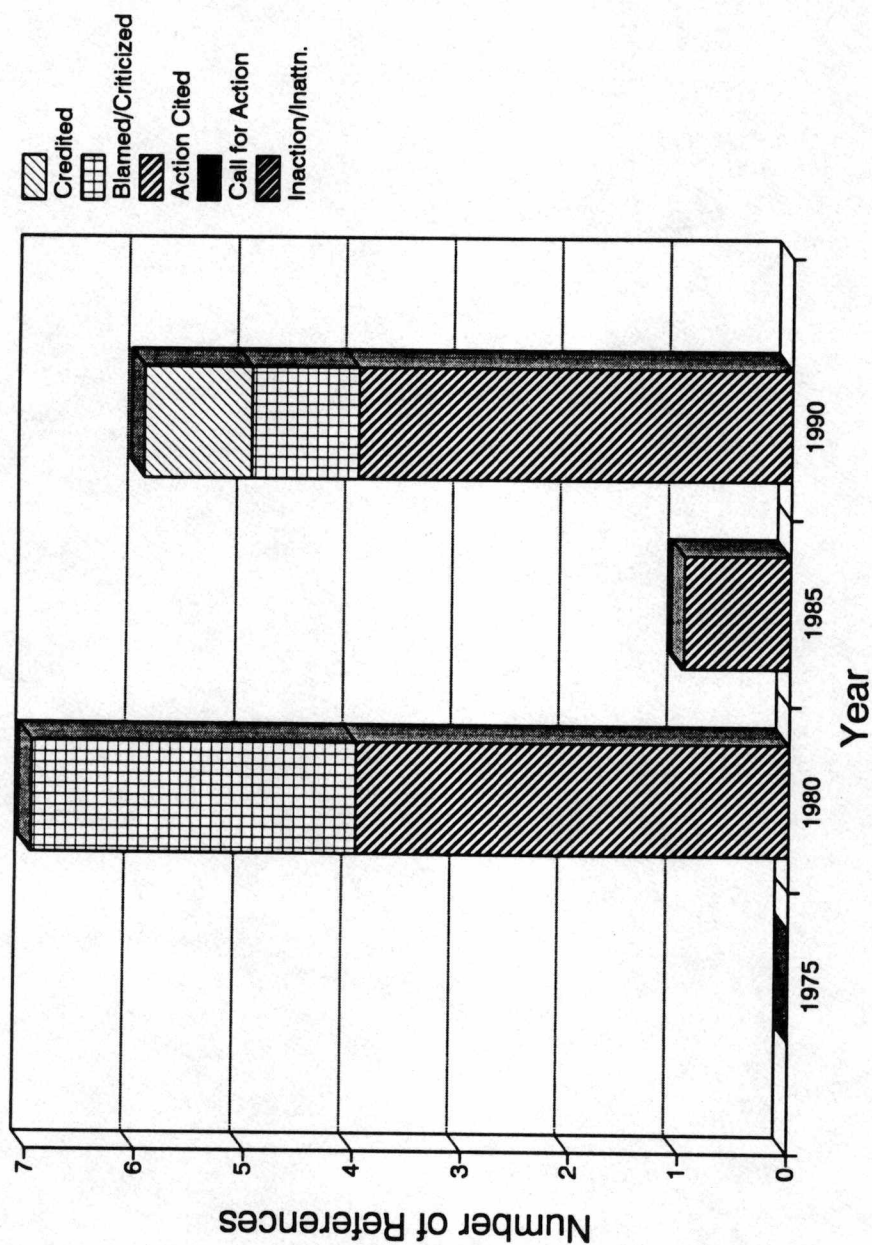


FIGURE 4.28
The Use of EPA Officials as References by CBS, 1975-1990

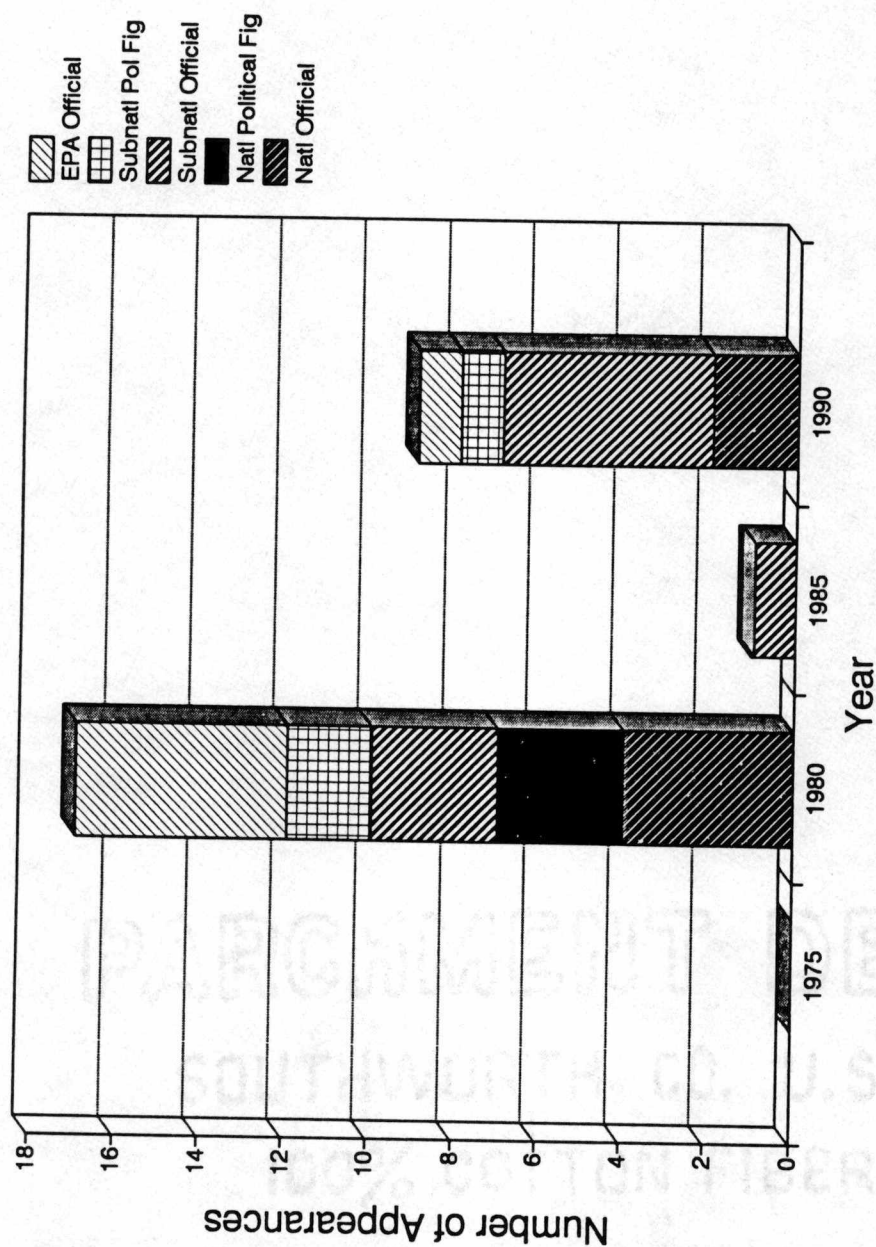


FIGURE 4.29
Appearances by Government Officials for NBC, 1975-1990

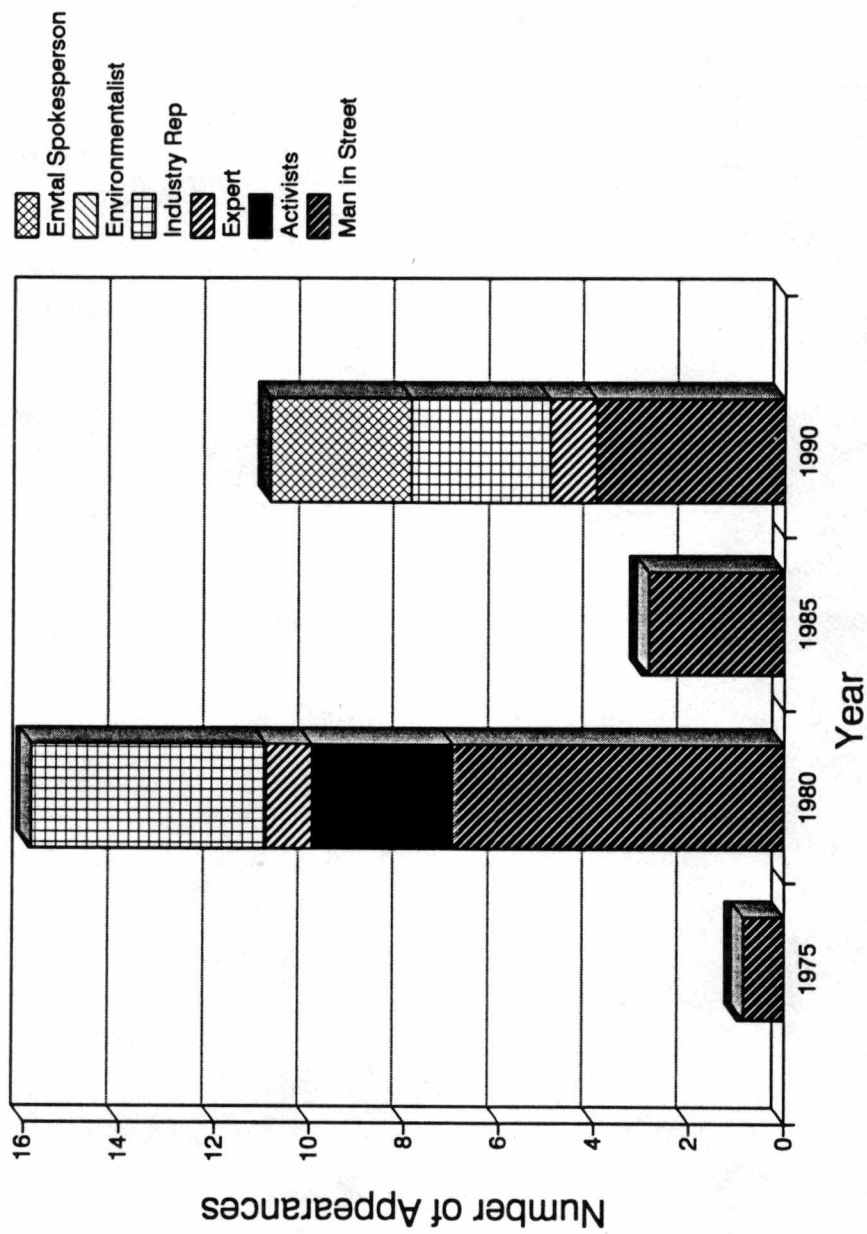


FIGURE 4.30
Appearances by Nongovernment Persons for NBC, 1975-1990

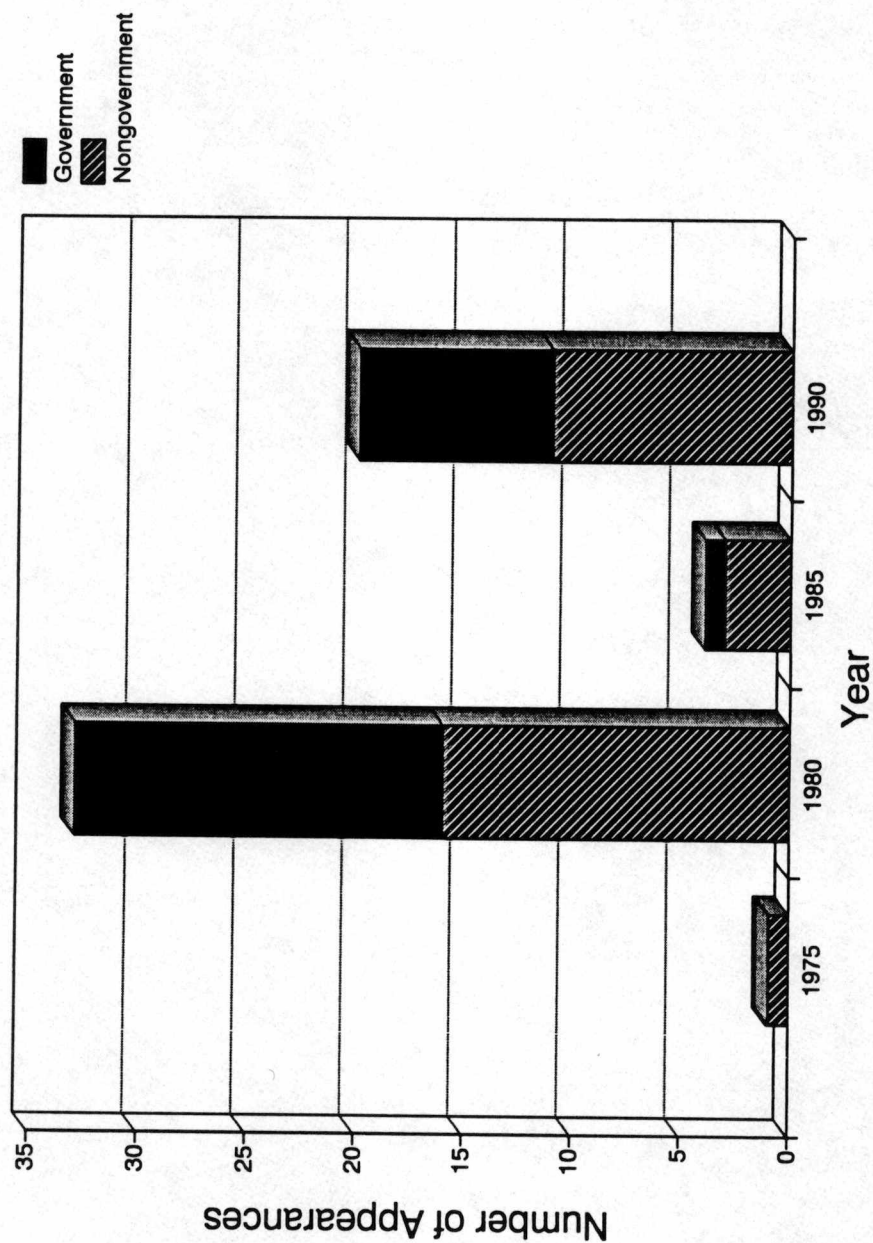


FIGURE 4.31
Government and Nongovernment Appearances by NBC, 1975-1990

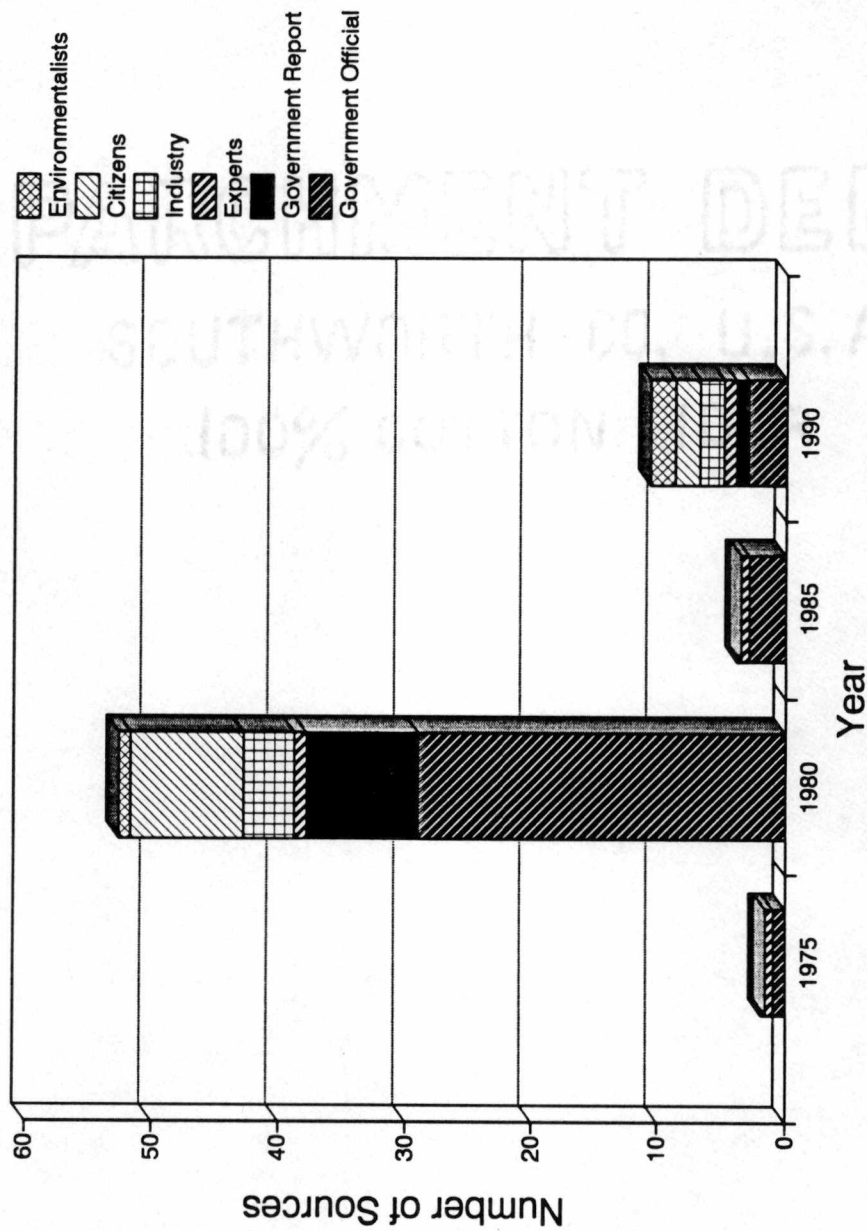


FIGURE 4.32
The Use of Sources by NBC, 1975-1990

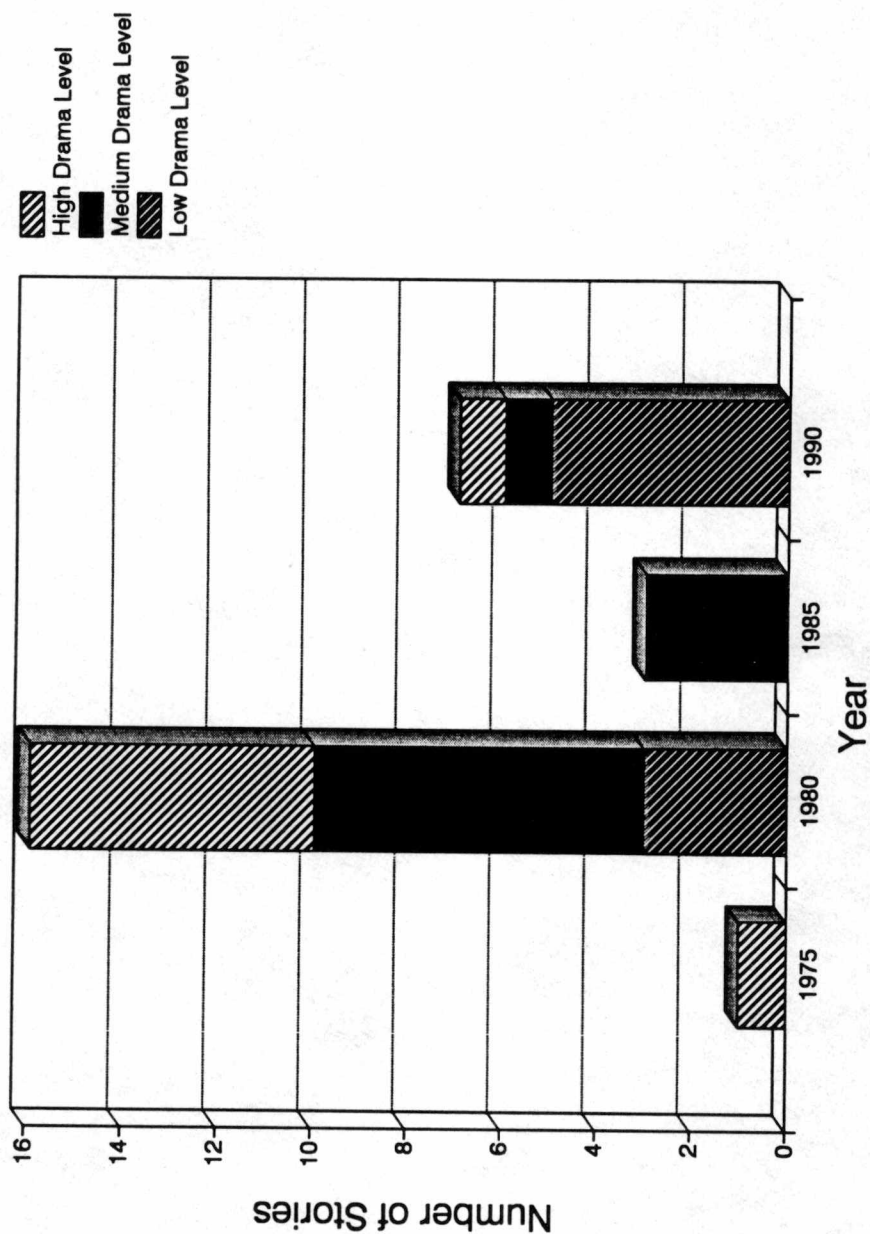


FIGURE 4.33
The Drama Level of Coverage by NBC, 1975-1990

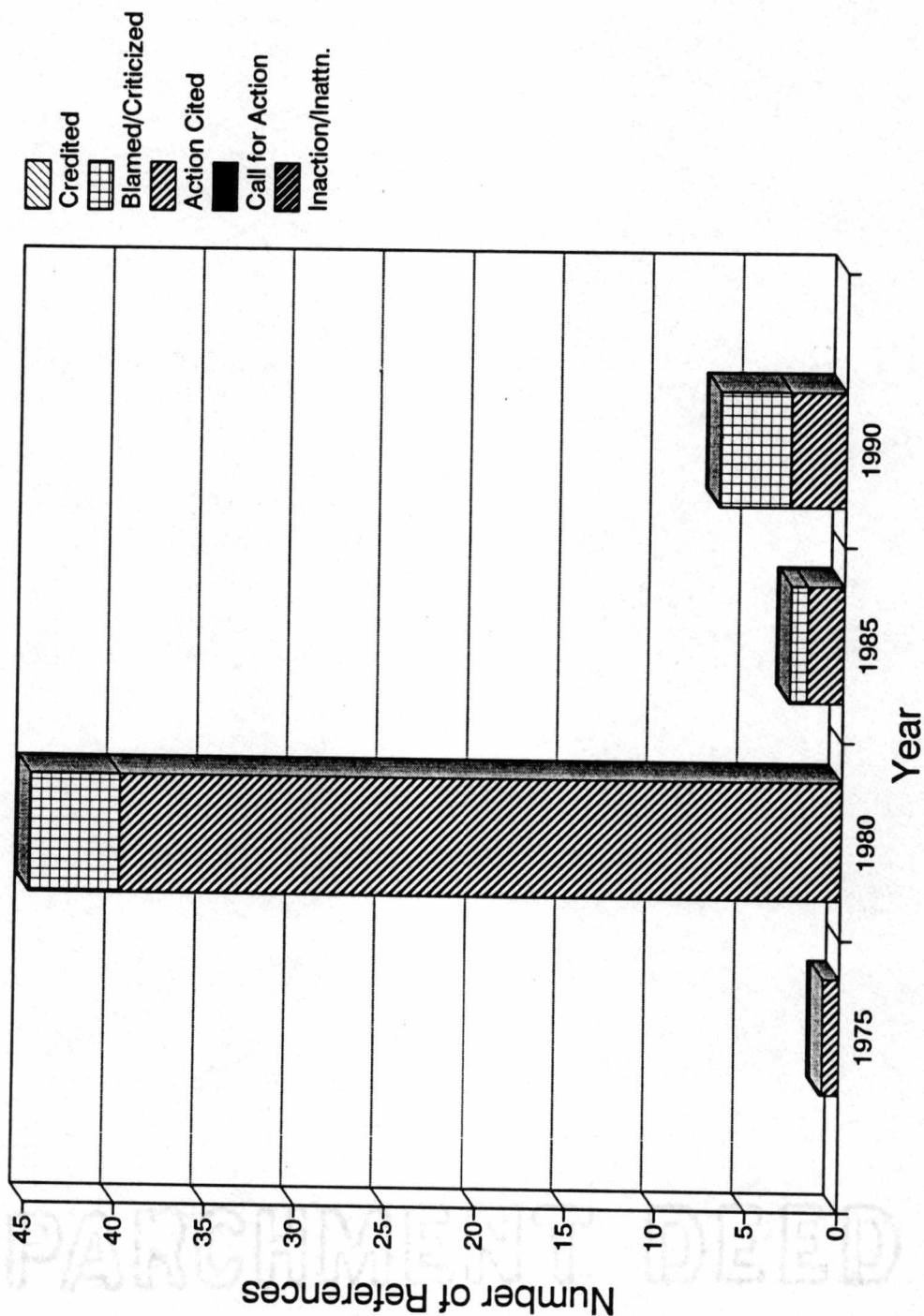


FIGURE 4.34
The Use of National Officials as References by NBC, 1975-1990

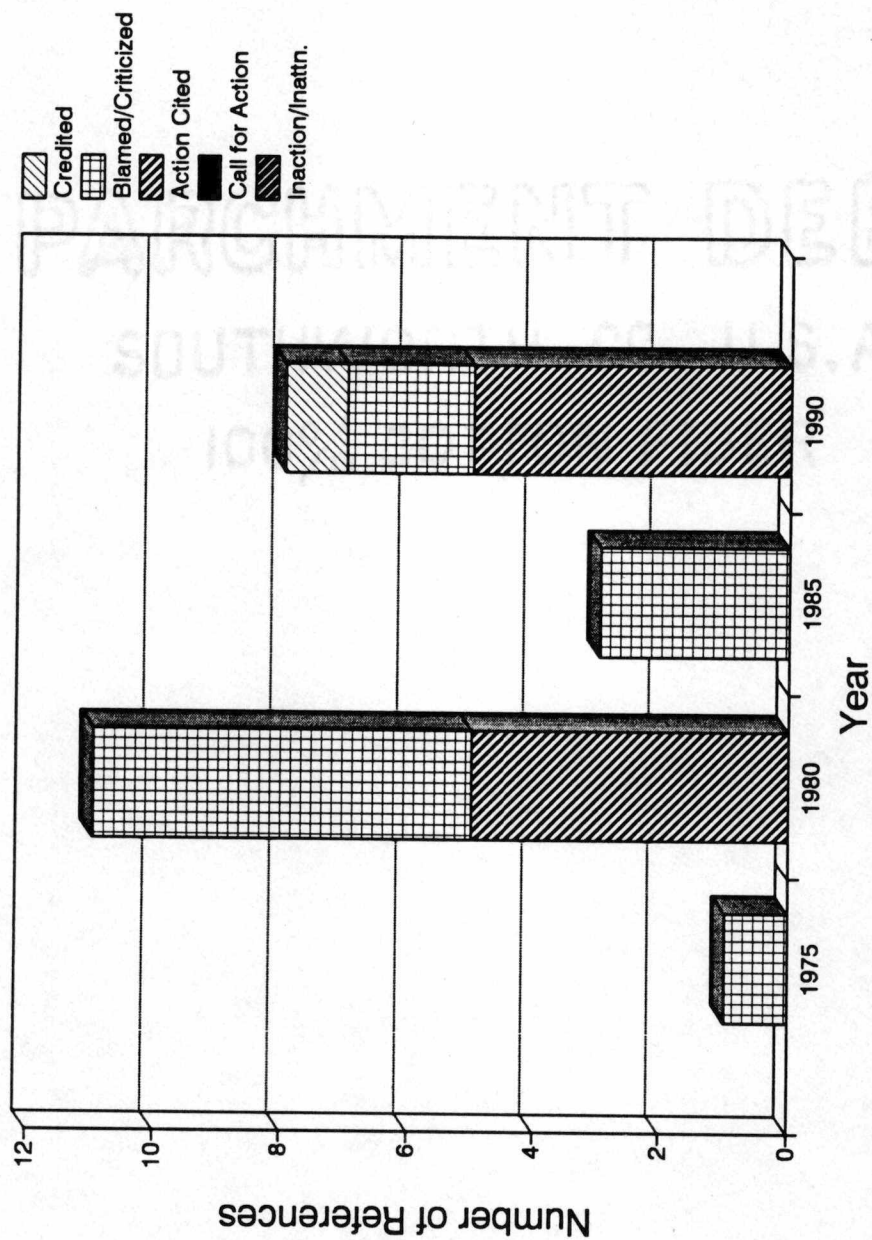


FIGURE 4.35
The Use of Industry Representatives as References by NBC, 1975-1990

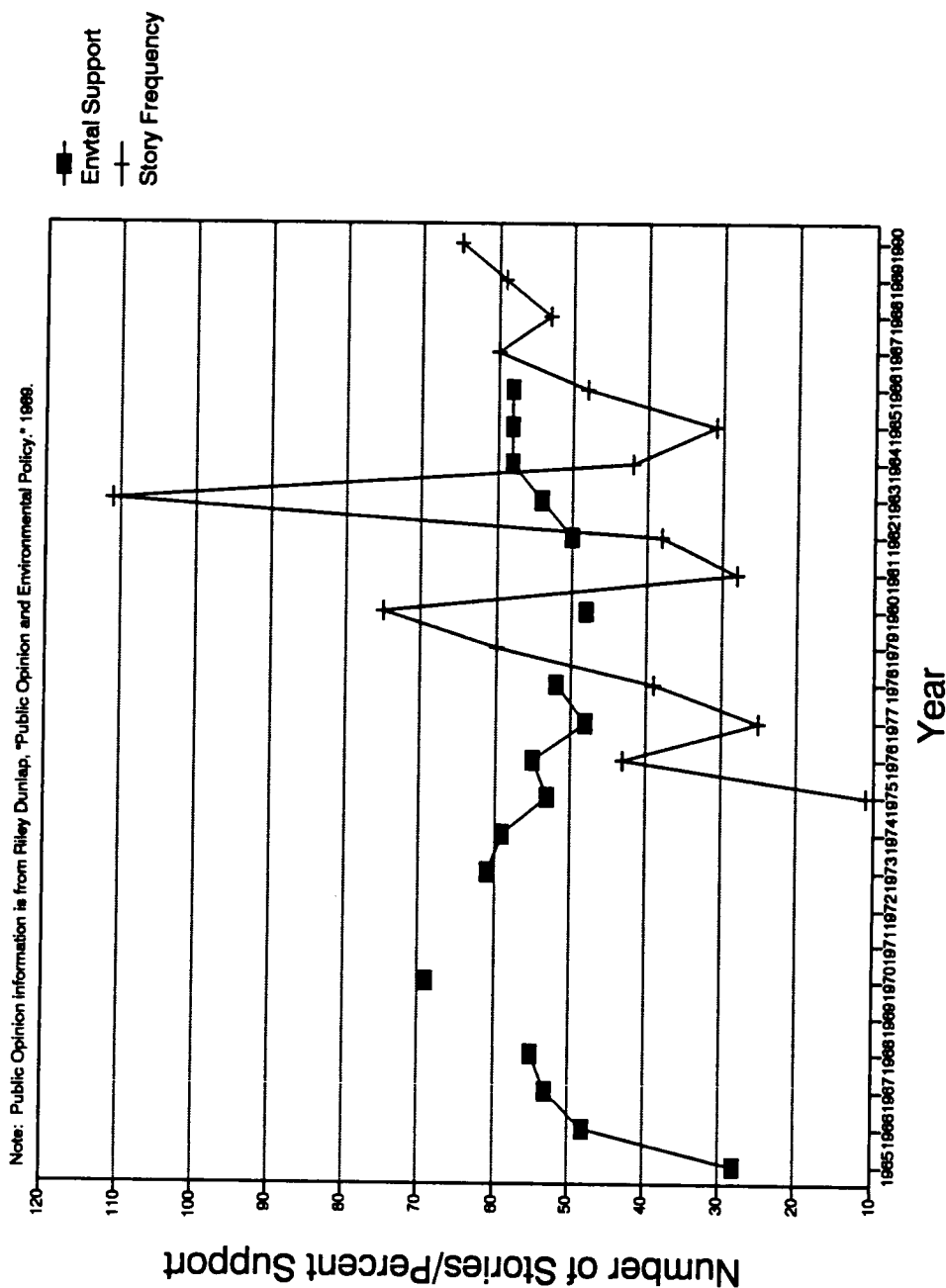


FIGURE 5.1
Frequency of Waste Stories and General Support for Environment, 1965-1990

VITA

Alan Hunter Bacot, born in Charlotte, North Carolina in 1961, graduated from Elmer H. Garinger High School in 1979. Upon receiving a Bachelor of Arts degree in Political Science from the University of North Carolina at Chapel Hill in 1984, he accepted a position with the State of North Carolina. In 1986, Mr. Bacot entered the Masters of Public Administration program at the University of North Carolina at Charlotte and graduated in 1988, at which point he entered the University of Tennessee's doctoral program in Political Science. While at the University of Tennessee, he accepted a graduate fellowship with the Energy, Environment, and Resources Center's Waste Management Research and Education Institute. In the spring of 1992, Mr. Bacot received his Doctor of Philosophy degree with a major in Political Science from the University of Tennessee, Knoxville.