A Narrative Analysis of Climate Change Coverage in the New York Times, 1988-2008: Social Responsibility and Weight-of-Evidence Reporting

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By

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ABSTRACT
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Drawing on narrative analysis, this study uncovers the metanarrative that served to structure the coverage of global warming as it appeared in *The New York Times* over a 20-year period. This analysis indicates that *The New York Times* used weight-of-evidence reporting over time to underpin the architecture of the metastory, in contrast to traditional objective reporting. Weight-of-evidence reporting is recommended as a method of incorporating the majority voice of science by de-emphasizing what is considered untrue, rather than giving it the same merit, while also documenting growing evidence. This finding is situated within the context of journalism ethics. The study of *The New York Times*' coverage is important because it is an opinion leader among press organizations, and because citizens use news to educate themselves, thus media have a duty to accurately inform the public. Understanding the story that *The New York Times* has told lays the groundwork for future studies related to how news coverage of climate change and other issues of risk has unfolded in this culture.

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Introduction

"Members of the Society of Professional Journalists believe that public enlightenment is the forerunner of justice and the foundation of democracy," states the Preamble to the SPJ Code of Ethics (1996). In coverage of scientific issues like climate change, the news ritual of objectivity may lead science journalists to give equal weight to majority and fringe scientists, or to scientists and nonscientists in science reporting. Based on the SPJ Code of Ethics call to journalists to act as public informers, a new newsgathering and writing ritual may be in order. Climate change serves as the example of a scientific risk controversy for the purpose of this study, which analyzes a sample of stories selected from 20 years of climate change coverage published in *The New York Times*. Drawing on narrative analysis, this study addresses the question: what story has the nation's most influential newspaper told about climate change over the last 20 years? As Flannery (2005) writes, "Climate change is difficult for people to evaluate dispassionately because it entails deep political and industrial implications, and because it arises from the core processes of our civilization's success" (p. 4). The public's inclination to look away from problems arising from civilization's success makes it all the more important to consider how news media construct stories that the public consumes.

The methods of storytelling employed by *The New York Times* are worth observing because it is a cultural artifact that is an opinion leader for other journalists (Brossard, Shanahan, & McComas, 2004). Studying *The New York Times* will show how this leading publication has dealt with the climate change issue and will offer useful

insights for future studies on this and other issues of scientific controversy and human risk.

The goal of this study aims to identify patterns in coverage of issues surrounding scientific risk controversy and critique them through a lens of moral responsibility. Journalistic norms require balanced coverage, which may be appropriate when initially reporting a story on controversial scientific discovery. However, as scientific evidence shifts heavily in one direction as the research progresses, the norm of objectivity in reporting becomes problematic, for including multiple differing viewpoints to achieve balance may distort the truth. Thus the journalistic norm of objectivity becomes morally ambiguous when it may interfere with the ability of people to evaluate information on human risk accurately. This observation is situated within the paradigm of duty ethics in general and the Society of Professional Journalists (SPJ) Code of Ethics in particular.

Public knowledge on the issue of climate change has evolved during the last two decades (Nisbet & Myers, 2007). Given that public knowledge of the issue has changed from 1988 to 2008, it is important to examine how coverage has changed over time as well, so we can prepare for the future. As parameters, I selected the media form of newspapers for this study, as print newspapers are a significant source of information for society over time. I selected a recent 20-year time span based on Nisbet and Meyers poll study findings as well as heightened public interest in the issue since 1988 (McKibben, 1989).

Exploring this issue is important because newspapers are a source of information that reflects public opinion over time (Hansen, 1991; Nisbet & Myers, 2007). Public

opinion influences news values and vice versa. Since citizens use news to educate themselves, media have a duty to inform the public accurately.

Media Ethics in Coverage of Scientific Risk

This value-based study suggests a morally responsible protocol for journalists who cover issues of scientific risk controversy: weight-of-evidence reporting, a strategy of finding out where the bulk of evidence and expert thought lies, and communication of that information to audiences. Media studies demonstrate that news coverage of environmental issues in the U.S. is contradictory and sometimes sparse (Dispensa & Brulle, 2003; Brossard et al., 2004). This fact justifies further research in the relationship between news media and environmental issues. By studying the climate change narrative in one newspaper of record over the span of 20 years, we can scrutinize the story that journalists have told while playing out the role of social informer. They are called to this duty through the SPJ Code of Ethics and the social responsibility theory of the press, as well as more general deontological principles such as fidelity in Ross's (1930) prima facie duties. This chapter discusses social responsibility of the press (Peterson, 1956) as a reason to focus on newspaper coverage. The history and science of climate change is also discussed to provide a background for *The New York Times* coverage of the issue starting in 1988, which is the beginning of the focus of this study. Finally, the ethical problem of media coverage of climate change is presented.

Press Responsibility as Social Informer

The news media play a vital role in a democratic society by furnishing its collective consciousness with the people, places and events that help define "reality." Most people depend on mass media to help make sense of the deluge of information

presented to them, especially information about environmental risks, technologies, and initiatives (Dispensa & Brulle, 2003; Hester & Gonzebach, 1995; Wilson, 1995). Risky situations are often fraught with scientific, cultural, and political ambiguity. When there are conflicting notions of potential consequences it is not clear which source is right and which is wrong, yet it is up to the individual to sort through the conflicting statements and complex evidence to reach a decision about the truth (Dunwoody & Griffin, 1999). Media coverage of an issue ideally enhances a person's ability to process information systematically by offering differing perspectives and timely developments relevant to the issue at hand. Through a methodical sorting and encoding of selected events, journalists' active construction results in some events being presented as meaningful, while others are ignored or marginalized (Dispensa & Brulle, 2003). In issues of scientific risk, citizens often need to take action to protect themselves from harm, which requires precise information from news sources. In this way, journalists are key aids in allowing citizens to meet their civic responsibilities.

The concept of social responsibility (Peterson, 1956), together with the SPJ Code of Ethics, underpins the journalist's role to enlighten the public when it comes to stories of scientific controversy. Denise and Peterfreund (1992) outline philosopher Kant's general duty ethics that include the precept to act out of duty with respect to others: "To whom do I owe duty, and what duty do I owe them?" If we attach this query to SPJ's ethical code, we see that the journalist's duty is to act independently in the name of the public's right to know, while treating all sources and colleagues involved with respect. The SPJ Code of Ethics notes that the journalist is ultimately accountable to his or her audience.

The public's reliance on journalists to interpret science is a condition of the modern information society. As people use news to educate themselves on issues to become active citizens, media have a responsibility to ethically inform them if they are in danger and impose meaning upon uncertainties for their readers. In reporting on issues of scientific risk, the audience becomes dependent on the journalist for an accurate story that will keep them informed of any potential perils. Green, Mann, and Story (2006) argue that ethical responsibility is rooted in certain conditions of human life. Dependency is an irrevocable and universal fact of human existence: in infancy, in sickness or injury, in some cases of disability, and in old age. The vulnerability of the physical body grounds our dependency, which necessitates human existence to be lived in relation to others. Human dependence and vulnerability establish an ethical claim. This call to care reverberates throughout the social world for each other (Green et al., 2006).

According to Ross's (1930) prima facie duties, i.e., moral obligations arise out of circumstance and relationship. When applied to this study, the circumstance involves the journalist as social informer, and the relationship involves the public's dependence on the journalist and the latter's duty to the audience. When uncertainty reigns, the SPJ instruction to minimize harm by seeking and reporting truth becomes a great challenge. The journalist must observe the code, which is supported by Ross's prima facie duty of fidelity, even when the truth is an evolving, ever-changing story.

Professionals in the field of journalism have embraced the obligation of social responsibility reflected in the SPJ Code of Ethics. Also influential in grounding the media profession in social responsibility is the work of The Hutchins Commission in the 1940s, named for Robert Hutchins, president of the University of Chicago and head of the

commission. The Commission on Freedom of the Press gathered information and had lengthy deliberations. Finally, in 1947 they published *A Free and Responsible Press,* which declared that the press plays an important role in modern society, and as such, it is imperative that a commitment of social responsibility be imposed on mass media. "The power and near monopoly position of the media impose on them an obligation to be socially responsible, to see that all sides are fairly presented and that the public has enough information to decide," writes the Commission (1947). The Commission proposed that the media should take it upon themselves to elevate society's standards, providing citizens with the information they need to govern themselves (Nerone, 1995). The ways in which the press accomplishes this include the SPJ edicts to minimize harm, seek truth and report it, and provide coverage that is fair and balanced, among others.

The study now turns to its chosen example of an evolving risk story in the scientific area: climate change. Providing context through an explanation of the science of climate change, it will include what is known and its uncertainties, as well as the history of the study of climate change into the 1980s. This history will set the stage for where this media coverage study begins, in 1988.

Science and History of Climate Change

What is known. Global warming, also referred to as the greenhouse effect or climate change, can be defined as the raising of the earth's temperature by various mechanisms: anthropogenic (man-made) actions such as the introduction of carbon dioxide (CO_2), methane and other gases; sunspots; or the natural variation of temperature

change by the evolution of the earth (McKibben, 1989; Hasselmann, 1997; Dispensa & Brulle, 2003). The greenhouse effect is globally recognized as a natural phenomenon whereby certain gases in the atmosphere trap heat near the earth's surface and keep the earth's temperature significantly higher than it would otherwise be, making it suitable for life.

As greenhouse gases increase in the atmosphere, the extra heat they trap leads to global warming. This warming, in turn, places pressure on earth's climate system and can lead to climate change (Flannery, 2005), which is a more encompassing description of the situation than global warming. Climate change includes the shifting of temperature in various places around the globe, though not necessarily recognizing that all locations are experiencing an increase in temperature (Hasselmann, 1997). The Intergovernmental Panel on Climate Change (IPCC) uses the term "climate change" to refer exclusively to changes in the climate brought about by human activities. The United Nations Environment Programme (UNEP) and World Meteorological Organization (WMO) established the IPCC in 1988 to assess available information on the science of climate change and to advise governments.

Uncertainties of climate change: Water vapor is a greenhouse gas and is also an enigma in the climate change arena, for it forms clouds, which can both reflect light energy and trap heat. By trapping more heat than reflecting light, high thin clouds tend to warm the planet, while low thick clouds have the reverse effect. No single factor contributes more than water vapor to scientific uncertainty on future climate change predictions (Flannery, 2005).

Regional climate fluctuations are largely due to shifts in air masses and tend to cancel out when averaged across the globe or over an extensive time period. As a consequence, attempts to detect anthropogenic climate change have focused on global scales and long-term trends. Global temperature trends are difficult to measure, the results are uncertain, and climate is enormously variable for reasons that are poorly understood. Furthermore, the global temperature record shows a substantial period of cooling from 1940 to 1970 while CO_2 continuously increased in the atmosphere, making a cause-and-effect linkage problematic (Mazur & Lee, 1993). The instrumental record for global surface temperatures extends back to little more than a hundred years, insufficient for useful estimates, augmented by longer paleoclimatic records from tree rings, corals, or deep-ocean cores, but such data has numerous problems of interpretation (Hasselmann, 1997). Thus, any prediction is based on incomplete data, meaning future effects are unknown.

Accordingly, climate change is an evolving risk story. The task of predicting future climate change is extremely complex, and specific effects cannot be calculated with any precision (Mazur & Lee, 1993; Wilson, 1995). Some human and some natural factors determine the earth's global temperature. Anthropogenic CO_2 is the primary culprit in an evolving environmental disaster but is also simply one factor among many pushing and pulling the climate (Livesey, 2002). Scientific uncertainty means that at best a loose coupling ties drought and severe weather to the greenhouse effect (Ungar, 1998). Ongoing studies are rapidly showing early predictions to have been underestimated. Current evolving analysis indicates a more rapid warming crisis occurring sooner than initially forecast and with more severe effects.

History of climate change study. Examining the history of the study of climate change through the 1980s is necessary to provide a basis for understanding *The New York Times* coverage that followed, which is the data analyzed in this study.

Scientists have been discussing the concept of climate change since the 1800s. Baron Jean Baptiste Joseph Fourier is generally recognized as the first person to have made an argument in 1827 about the greenhouse-like properties of the atmosphere, and to suggest that the atmosphere was important in determining the earth's surface temperature. Throughout the 19th century, experiments and observations were undertaken to understand the effects of the gases involved, and it was recognized that CO_2 and water vapor were the most important greenhouse gases. In 1863, British scientist John Tyndall was first to suggest that ice ages were caused by a drop in atmospheric CO_2; he also hypothesized that a rise in CO_2 would cause an increase in temperature (McKibben, 1989; Dispensa & Brulle, 2003).

At the end of the 19th century, Swedish scientist Svante Arrhenius calculated that if the concentration of CO_2 in the atmosphere doubled, then the temperature of the planet would increase. He was also the first to propose that human industrial activities might be significantly affecting the climate (McKibben, 1989; Dispensa & Brulle, 2003). For many years after his claim, scientists believed that any extra CO_2 would safely be absorbed by the oceans. In 1957, Revelle and Seuss gave good reasons to believe otherwise and also claimed that humanity was conducting a "large scale geophysical experiment" (Ungar, 1992, p. 488). Throughout the 1960s, climate research was viewed as a precursor to humans consciously changing the climate to make it more favorable. In 1963, the Conservation Foundation sponsored it's first meeting on climate change while in 1965 a

report of the President's Science Advisory Committee contained the first recognition in a government document that human activities could produce climatic change.

As environmentalism started to form in the 1970s, scientific, as well as sociocultural, attitude of domination over the earth's climate for humanity's benefit began to change to one in which humans are dependent on climate (Dispensa & Brulle, 2003). The issue reached a new stage in 1979, when a series of significant events concerning climate change occurred: a report to the Council of Environmental Quality cast the greenhouse effect as a policy issue; the Department of Energy set up an interdisciplinary CO_2 research program; the National Academy of Sciences studied the problem; and the first World Climate Conference urged all nations to address the threat.

From 1985 on, as climate change intersected with concerns about a hole in the ozone layer of the atmosphere, scientists began making predictive statements about climate change effects, and over time, many more claims came to light (Ungar, 1992). During the 1970s and 1980s, the WMO and International Council for Scientific Union developed a scientific consensus on climate change: humans are changing climate inadvertently (McKibben, 1989). The consensus is now represented by the IPCC. The rest of the narrative will be continued in the analysis of *The New York Times* coverage of the issue from 1988 to 2008. This background provides the context necessary to understand media coverage of this issue within this study's parameters.

The Ethical Problem of Media Coverage of Climate Change

A starting point for discussion about media roles in relation to public awareness and concerns about the environment is to acknowledge that for the public, mass media generally serve as a key source of information about ecology problems and solutions (Hansen, 1991; Burch, 1995). The science journalist has to translate technical information into jargon-free prose that is understandable to a general audience (Allan, 2002). Scientific endeavors are typically highly complex affairs, and when journalists impose narrative structure on them in the name of a good story, or try to simplify scientific concepts, it may lead to misunderstandings and misinterpretations on the journalists' part. Such constructions challenge journalists' duty of fidelity to their audience.

According to Nelkin (1995), the public understands science "less through direct experience or past education than through the filter of journalistic language and imagery" (pp. 2–3). When confronted by scientific uncertainty where human risks are concerned, ordinary members of the public turn to the news media for a greater understanding of what is at stake. Thus, news media are key to forming a cultural framework for climate change, as well as keeping it in (or out of) the public discourse.

Some environmental issues are inherently woven into the social fabric as recognized collective agreements about what is problematic (Williams, 2001). Much news media coverage of the environment is anchored in certain beliefs ingrained in a culture (Hansen, 1991). When a story is still evolving, as it is in the case of climate change, the general audience relies on journalists to bridge the gap between elite

knowledge of environmental problems and common knowledge. Public policy about crucial and complex scientific risk issues depends on public attitudes, which tend to be strongly affected by mass media coverage (Hansen, 1991).

At the center of the public policy debate over climate change has been the perceived trade-offs between the need for immediate action and the likely costs to citizens and the economy (Nisbet & Myers, 2007). According to Sample (2007), climate scientists say that inaction on the climate change issue would lead to unacceptable risks for public health and the natural environment, such as coastal flooding and species eradication, and emphasize the need for intensive collaborative international action to reduce the worst impacts of climate change, such as environmental disasters.

Since environmental disasters automatically command media attention and shift media practices, the public is more likely to become exposed to, and aware of, extreme interpretations (Ungar, 1998). Risk analysis reveals that fear of a phenomenon increases with the number of people exposed and is particularly great when the impact is global. Social scares, which accelerate political demands, can be key catalysts for social change. Sheer repetition of a disturbing image raises concern and stimulates public participation, thus newspapers can play a prominent role in promoting or retarding this process (Mazur & Lee, 1993; Dispensa & Brulle, 2003). Actions proposed by scientists and environmentalists emphasize development of alternatives to petroleum and coal, fuel sources that contribute to climate change through CO_2 production. Comprehension of media messages over time is integral to understanding the climate change framework.

The news media have extensively covered the environment over the past 30 years, primarily because specific events or problems often are negative, unexpected, rare, and

less predictable than positive, or status quo news. In fact, public interest in environmental risks remains high longer than with many other issues because such risks affect everyone, are highly dramatic/visual, and identify villains and victims when narrative techniques have been employed to disseminate these issues (Meister & Japp, 2002). However, environmental issues have had ups and downs in how they have been reported. By creating two opposing sides to an argument, the news writer inadvertently creates a gridlock emphasizing conflict rather than the cooperation required for change.

The news value of conflict influences a storytelling approach that may place inaccurate emphasis of certain elements. Moorti (1991) argues that climate change reporting began with dramatic overstatements of new findings as news hooks, thus uncertainties may have been overstated. Many scientists feel that the press has spent too much time focusing on small areas of disagreement, given too much attention to scientific uncertainty, and polarized the issue needlessly (Wilson, 1995). According to them, newspapers only cite bits and pieces of the growing evidence that demonstrates climate change is occurring.

In the U.S., the strong scientific consensus underlying the apparent changes in global climate has been lost in the muddle. Ungar (1998) writes that so much uncertainty surrounds the scientific climatological facts that political inaction and counterclaims suggesting warming will be trivial enjoy plenty of scope. Therefore, what most Americans know about climate change is confusing and inaccurate (Dispensa & Brulle, 2003). Twenty years after scientists and journalists first alerted the public to the potential problem of climate change, few Americans are confident that they fully grasp the complexities of the issue, and on questions measuring actual knowledge about either the

science or policy involved, the public scores very low (Nisbet & Myers, 2007). Climate change has proved too complex for most journalists to interpret comprehensibly and is too convoluted to be encapsulated in a sound bite. When the media does give sustained focus on the complexity of a problem, however, it soon bores a majority of the public. Additionally, environmental issues such as climate change create a fundamental challenge, not only to business interests, but also to the legitimacy of the entire industrial society (McKibben, 1989; Dispensa & Brulle, 2003). Addressing the climate change issue requires sustained attention and effort, plus fundamental changes in social institutions or behavior. Attempts to change such behaviors and institutions threaten important groups within society. As soon as the media realize that a constant emphasis on a particular problem is threatening many people and boring more, they will shift their focus to some new problem (Downs, 1972), as has been the case with climate change.

Most citizens do not want to confront the need for major social changes on any issues except those that seem to threaten them directly. People experience weather as a transient phenomenon; a cold winter can erase the memory of a hot summer. Scientists define climate change as a future-oriented problem, with effects predominately predicted for the middle or end of the 21st century, thus many people might simply be unable to identify personally with the problem. Climate change is, in general, "not founded on everyday experience, has no obvious, clearly linked, immediate effects, and is not readily observable" (Ungar, 1992, p. 489). Since the extreme negative effects of climate change are more likely to impact other humans living in a different place and time, most people are not continually reminded of the problem by their own suffering from it, and are more likely to avoid discussing the issue or making a change today that will benefit tomorrow.

Newspapers, on the hand, have an opportunity to raise the issue's salience through sustained coverage.

Studying newspaper coverage of climate change is important because it not only informs citizens about issues that concern them, but also documents how people perceive their realities. As Johnson-Cartee (2005) explains, news media organizations are inherently a part of the community in which they exist, and for this reason they are subject to community influences. Examining newspapers allows us to see how their coverage reflects public opinion over time. Dunwoody (2005) writes that journalism exists in principle to help individuals make reasoned decisions about the world around them. As providers of information to the public, journalists have a social responsibility to keep the citizenry fully informed.

As Brown (1992) notes, dramatically increasing attention to environmental degradation may make it "easier for the public to accept causal linkages previously considered too novel" (p. 279). Once public awareness is gained, in part through the influence of news media coverage, citizens can pressure policymakers, take action in their own lives, and encourage others to do so by raising awareness in their communities. To achieve beneficial environmental outcomes, the needs of the public must be assessed, and messages and communication strategies tailored accordingly (Burch, 1995). Culture-sensitive environmental education can be particularly effective in mobilizing local communities toward environmental protection. Newspaper stories are keys to education and mobilization.

In summary, journalists are called to the duty of social informer through the SPJ Code of Ethics, as well as the social responsibility theory of the press and more general

deontological principles such as fidelity in Ross's prima facie duties. That responsibility becomes problematic when trying to determine the truth in evolving issues of scientific risk, the problem of climate change serving as one example.

Only by considering the method of newspaper message production can it be discovered how journalists use tools to craft their stories, which influence the shape the story takes in the public's consciousness. The next chapter will discuss the journalistic norm of objectivity, an alternative called weight-of-evidence reporting, and other influential news routines that are useful toward understanding how one leading national newspaper, *The New York Times*, has presented the story of climate change over the past 20 years.

Journalism Concepts and Scientific Reporting

Only by considering the routines of newspaper message production can we discover how a story takes shape in the paper's coverage. Two of the routines are of interest here: objective reporting and weight-of-evidence reporting. Objective reporting balances various sides of an argument to allow voices of discord to penetrate the discourse. On questions of climate change, this is a problem because climate change by consensus is resolved from the standpoint of science, yet in the name of balance, the issue is not presented as such, as dissident views are given an equal platform. Weight-of-evidence reporting consolidates proof substantiated by the expert testimonies of the majority into a story that leaves no room for doubt of the veracity that climate change is occurring. The way the story is presented influences the way society learns about, and takes action on, important issues. Deadlines, sourcing, and controversy also impact how environmental messages are created for public consumption. The complexity of the climate change story may be misrepresented when crafted under time constraints, which create reliance on objectivity to write short, simplified stories using sources high on the hierarchy. Such stories usually contain two opposing sides to meet the news value of controversy to spark interest, even though accuracy of risk issues should come first. These concepts form a framework for the narrative analysis of *The New York Times*' portrayal of the climate change issue.

Objectivity

Journalists are key players in the dissemination of information that impacts people's lives (Allan, 2002). As providers of information to the public, journalists have a social responsibility to keep the citizenry informed. Guided by the SPJ Code of Ethics, journalists are required to provide fair, balanced, and accurate coverage in news. One way journalists tell stories is through the tool of objectivity, where the journalists approach issues by representing voices from various sides of an argument. The "ritual of journalistic objectivity" (Tuchman, 1978), or balanced perspective, is considered a particularly prominent concept to American journalists.

Not everyone favors objectivity as a journalistic norm. According to Cunningham (2003), devotion to objectivity can lead to gaps in coverage. Theodore Glasser (1980) wrote that in their role as impartial and uncritical reporters, journalists enjoy a privilege of "neutral reportage." He said this privilege is likely to inhibit social inquiry because neutral reportage encourages journalists to report facts truthfully, without regard for the truth about the facts (Glasser, 1980). Just because one side says something is true does not make it so.

In other words, journalists are not always in a position to determine what constitutes truth. Objective journalism reproduces the views of its sources, whether or not they are confirmed to be true. According to Dunwoody (2005), if a reporter cannot determine what is true, the objectivity norm comes into play, serving as a convenient strategy. Objectivity and balance have evolved over time to serve as surrogates for truth claims. If a reporter cannot tell what is accurate, she or he can at least record truth claims accurately. Dunwoody (2005) says that objectivity and balance are two behaviors that

confer value on the practitioners of journalism, thus these characteristics of news writing are sanctioned and defended by them (also see Cunningham, 2003).

However, focus on a journalist as a passive transmitter allows the profession to make accuracy the most important characteristic of a story and bypasses issues of validity altogether. Frankly stated, the journalist may be shirking responsibilities of public service in the name of impartiality. Newspaper coverage legitimizes topics in the public eye, but giving equal weight to conflicting points of view to satisfy the balance norm can muddle the message. Balance gets put into play as the presentation of two contrasting points of view, which can place a deceptively simple interpretation of an issue before the public. The majority of mainstream journalists are expected to seek opinions from at least two sides. In most cases, differing perspectives are reduced to two competing points of view, and the journalist then works to represent them accurately in any given story. Although the journalist's message in a balanced account is that truth resides somewhere in the story, the readers may perceive that all points of view are legitimate (Dunwoody, 1999). Efforts to balance stories may confer legitimacy to less qualified individuals and rhetorical claims, thus producing a journalistic leveling that transforms competing discourses into equivalent ones.

This objective leveling can be critiqued in coverage of controversial science issues. The journalistic tendency to draw in discordant opinions in a story for balance can lend strength to a viewpoint that may have very little credence in the scientific community at large. Stocking (1999) notes that the ritual of objectivity may lead science journalists to give equal weight to leading scientists and fringe scientists, or even non-scientists, alike. Climate change is a classic case of this problem, in which the views of a

small minority of dissident scientists are presented with equal weight as those put forth by a large majority within the scientific community.

On questions of climate change, which are by consensus seen as having been resolved from the standpoint of science, voices of discord often penetrate the discourse. In controversies, scientists, politicians, and other experts will use uncertainty as a rhetorical tool to sway public opinion. According to Dunwoody (2005) and "Unbalanced Reporting" (2004), purely objective coverage of climate change contributes to public confusion and may open the door to political maneuvering. To give equal weight to two sides when one side is a majority and one side a minority is to misrepresent the unbalanced nature of the scientific controversy. Dunwoody (2005) argues that audiences may interpret such stories as telling them that no one knows what is true, when in fact that majority of experts have confirmed it. Misleading audiences, even unintentionally, deviates from the prima facie duty of fidelity and the SPJ Code of Ethics. It also does little to inform audiences of possible harms or recommendations toward tackling the issue.

The back-and-forth tendency of the objective form of news presentation tends to obstruct a final synthesis of ideas that might allow public opinion to move forward on a controversial issue. With science issues such as climate change, the public tends to lose interest after several rounds of verbal or textual sparring between the two sides. With public interest waning, attention fades in the media without much progress or resolution on how to deal with the issue. Those factors can promote a tendency to deal with scientific issues in spurts, also known as the issue-attention cycle (Downs, 1972). The

issue-attention cycle suggests that humans attend to problems when something drastic happens.

Weight-of-Evidence Reporting

Weight-of-evidence reporting, described by Dunwoody (2005), calls on journalists to find out where the bulk of evidence and expert thought lies and then to communicate that to audiences. This strategy is particularly useful in science reporting. It is the journalist's duty to report on scientific developments accurately to help ensure that the scientific community's rational discourse is transmitted to the public in an impartial manner. Accuracy, in this context, is to be defined in relation to the majority from within the community on issues of scientific controversy. The conventional objective reporting might not be adequate when journalists are covering evolving science that has potential risk of harms to humans.

Weight-of-evidence reporting does not systematically include opposing points of view just to have a balanced story. Instead, it consolidates proof substantiated by a majority of expert testimonies into a story that leaves no room for doubt of an issue's veracity. In science writing, reporters are still responsible for accurately sharing the existence of contrasting points of view and meeting the requirements of objectivity. In addition to this, however, they need to include evidence indicating which point of view is shared by the majority of experts, and whose interests do their sources represent.

Mintz (2005) wrote that exploring funding could tell the reader why a group or person might be taking a certain stance. It is misleading to imply to the reader that a quoted source is independent when that is not the case. Any report that fails to include

this information is incomplete, whether it is an intentional omission, or due to investigative laziness. Assuming that a source is sincere is not only naïve, it is negligent. Fact-checking is arguably more important than gathering facts. Weight-of-evidence reporting can be employed when a story reports on a controversy in which both science and society have agreed that truth lies more firmly on one side than on the other (Dunwoody, 1999).

Other News Routines

Several other news routines that influence the creation of reports for an audience are relevant in the case of climate change. Regarding issues of scientific risk, these routines are discussed below. These norms are well established, and while not always readily observable in the final product, they are assumed to be in effect in *The New York Times* coverage of climate change.

Time constraints. Another feature of news writing that influences message creation is working within time constraints. As Hansen (1991) notes, the time scale of most environmental problems and issues does not fit easily with the 24-hour cycle of news production (also see Mazur & Lee, 1993). Tuchman (1978) studied news routines and noted that the time restraints created by the deadline-heavy schedule of daily newspapers made it a challenge to dig deep into source claims. In Tuchman's study, output (quantity) sometimes was prioritized over quality (investigative value). A pressing deadline creates a reliance on objectivity as the norm, which saves time and protects the journalist by conveying neutrality. Objectivity also helps reporters and editors make

decisions quickly by labeling them as disinterested observers and protecting them from negative consequences. Complex stories of scientific risk tend to be a poor fit in the news business, because newsrooms deal in simplified stories put together in haste, preferably with two opposing sides or views (Allan, 2002). They require a continual supply of fresh stories they consider newsworthy in order to sustain coverage of an issue. These factors are problematic in coverage of scientific risk issues.

Finding sources. Another feature of news writing that influences message creation is sourcing. Sources routinely define the boundaries within which story choices are made. When science becomes controversial, it splinters into often dueling points of view. This gives journalists the opportunity to play a major role in constructing popular understanding of the science in question. A journalist's power lies in the ability to select, and thus legitimate, voices.

Journalists will readily follow the interpretive lead of respected sources (Dunwoody, 1999). Being overly critical is not advantageous for journalists, who must maintain a good relationship with sources. Also, many science journalists are untrained in science**,** making it intimidating for them to question a scientific expert who possesses more technical knowledge (Dunwoody, 1999). In summary, journalists generally have neither the time nor the expertise to determine if a source is telling the truth.

To aid in evaluating truth claims, journalists employ an unofficial hierarchy of attribution, revealed by the order in which sources are quoted in articles. The higher up in the bureaucratic hierarchy the news source is situated, the more authoritative his/her words will be for reporting purposes. Hansen (1991) discerns several rings of sources

flowing outward from the governmental realm of officials. The first ring is composed of major institutions, such as schools and research and policy centers. The second ring comprises advocacy groups, and in the third ring are the bystanders, those individuals who are more affected by a public problem and the government's plan to deal with it. Finally, in the outermost ring is the general public. In the climate change discourse, the forum of formal political activity is near the top of the source hierarchy, together with the scientific community and the courts (Hansen, 1991).

A difficulty with such a hierarchy is that when collective beliefs of scientists are reaffirmed, journalists are less likely to contradict and scrutinize the alleged "experts." Members of both the scientific and journalistic communities are likely to benefit from what can be deemed a mutually advantageous relationship. Just as news organizations often seek to boost their audience figures by drawing on reports of exciting scientific discoveries, scientists can attract political and economic support for their research by receiving favorable media treatment (Allan, 2002). Inaccurate conceptions of climate change may, then, arise not just from errors in perception or interpretation, but also from the construction and manipulation of incorrect formulations by those in a position to profit from such constructions.

Bending the truth of climate change conceptions is not difficult, since scientific arguments about environmental problems are inherently prone to uncertainty. They involve multiple, interacting causes, allowing scientists to question the definitions and procedures of other scientists, promote alternative explanations, and cast doubt on the certainty of predictions (Williams, 2001). The novelty of a priority claim (new finding) signals the presence of uncertainty, which may drive journalists to seek more voices to

achieve balance of opinion and a counterpoint to a new finding. Even in the presence of a novel announcement, journalists may default to the individual voice of the claim maker (Dunwoody, 1999). When scientific controversy erupts, a reporter may feel responsible for conveying a point of view, no matter how scientifically aberrant it may be. Partial truths may be supported by individuals, such as experts or scientists in the field, who have been compensated by the industries invested in preventing a social change in attitude toward climate change.

Another reason a source's truth may be obscured may be due to officials withholding information on the basis that it will alarm the public, that the public will not understand the risks, or that it will harm the business climate. Many scientists oppose public disclosure on the grounds that laypersons are unable to make rational decisions (Brown, 1992). Reporters are unable report what they do not know, so maintaining positive, mutually beneficial relationships with sources is paramount. Battling groups articulate their interests by lobbying government representatives and making known their views in the media. Notably, industry appeals are often sourced higher in stories than activist claims. Similar to their relationships with scientists, reporters have a symbiotic affiliation with activists: the exchange of information for publicity. This publicity focuses government resources on solutions and is the lifeblood of environmental organizations, which rely on voluntary support (Mazur & Lee, 1993). Individuals, groups, and movements face a dilemma in trying to draw media attention that typically flows toward public officials and elite circles. Media attention signals status and legitimacy to the public, so the consequences of being ignored by newsmakers can be severe for activist groups. This marginalization takes forms such as national news media's ambivalence

toward grassroots views and unconventional news sources, including those engaged with social protests (McCluskey, 2006).

Unconventional news sources often face the challenge of being anti–status quo and lacking an organizational structure, thus they are regularly portrayed as angry masses of protesters. Since they lack the resources that typically lead to political and news media access, they use intensity of feelings (McCluskey, 2006), but emotionalism is not valued as highly as facts are in the news environment. The low profile of pressure groups in media coverage indicates that while they may play a key role as claims makers by drawing the attention of the media to particular environmental problems, journalists turn to the public authorities, formal politics, and scientist for validation of such claims (Hansen, 1991).

News values. News is a version of reality shaped by journalistic norms and conventions. Reporters and editors determine what is newsworthy by deciding if the story should be publicly recognized, important, and interesting. Additionally, editors encourage journalists to recognize and highlight controversy because conflict makes for a good story (Dunwoody, 1999). Opposing sides become protagonists and antagonists to create conflict, but to achieve this, a mutation of the facts occurs for the sake of a good story. Routine scientific research lacks the drama necessary to spark lively newspaper headlines. At the same time, some scientists maintain that on those occasions when a certain scientific development is given due prominence, it all too frequently happens for the wrong reasons. Instances of sensationalist reporting—for which news values give way to entertainment values—can misrepresent the nature of scientific inquiry.

In summary, this chapter has explored how journalistic practices and news routines can influence the shape of news stories related to the issue of climate change. Only by considering the routines of newspaper message production can it be discovered how the story takes shape in the paper's coverage. Two routines are of interest here: objective and weight-of-evidence reporting. The news influences the way society learns about, and takes action on, important issues. Deadlines, sourcing, and controversy also influence how environmental messages are created for public consumption. These concepts form a framework for the narrative analysis of *The New York Times*' portrayal of the climate change issue.

The next chapter discusses the narrative analysis approach and sampling methodology for my study.

Methodology

The method used in my study to explore *The New York Times*' portrayal of the climate change issue over time is narrative analysis. Several theories, outlined below, guided the choice of *The New York Times* as a source for data analysis in this study. Williams's (1977) structures of feeling, which recognizes signs of social trends, and Downs' (1972) issue-attention cycle theory, which says humans attend to problems at moments of crisis, influenced the sampling method of newspaper climate change coverage over 20 years.

Narrative Analysis

The narrative analysis research methods used to analyze data draw from structuralism and literary criticism in its use of story elements, structure, and organization. Narrative structure provides a theoretical framework for analysis through different elements: story, scene, actors and agents, motives, and actions. Setting themes depict when and where the characters' action takes place. Character themes describe the agents in the drama and ascribe qualities and motives to them. Garner, Sterk, and Adams (1998) point out that narratives invite audiences to identify with the characters: "they suggest motives as reasonable and as working for these characters" (p. 62). Action themes, or plotlines, deal with character's actions within the drama (Bormann, 1985). The character, setting, and conflict elements tie the story together.

Scholars have argued that the narrative form is pervasive in journalism. Palfreman (2006) described journalists as storytellers who develop characters, settings, and conflicts

in their accounts. The journalists themselves, sources, and those who have a vested interest in the topic or the newspaper/magazine are characters, the story they tell is the conflict (action), and the time constraints and locations are setting devices.

Like literature, news writing can have a moral or instruction to the stories journalists tell. Newspaper accounts show their audience social rules about right and wrong (Dispensa & Brulle, 2003; Hester & Gonzebach, 1995). Observing a narrative over time presents a meta-effect from which scholars and journalists can learn. Under this premise, this study examines the climate change narrative over 20 years as told by a global opinion leader of the press, *The New York Times.*

In social science, narratives are seen as consensually defined social realities that empower people through subtle understandings of their life situations (Manning & Cullum-Swan, 2000). The psychological process of being caught up in the narrative helps group members interpret common experience; people who share the vision become a "rhetorical community, knit together by a common sense of purpose, agency, motivation, and action" (Garner, et al., 1998, p. 63). Studying the climate change narrative offers insight into the different groups involved, as well as a forum for fomenting change.

While the focus of narrative analysis is on the individual story, by exploring a number of stories that cohere as a larger story - a metastory - a clearer understanding of the culture that produces a narrative can be achieved (Bishop, 2001). Narrative analysis reveals social information and values, and it packages information and inferences (Garner et al., 1998). News narratives are anchored in cultural meaning, thus not only does the story of climate change enter social consciousness through print media coverage, but also social consciousness influences print media coverage of climate change. Narrative

analysis provides clues to the subjectivity of individuals and to meanings that characterize a culture (Foss, 1996).

We can learn "understood" social rules about what to believe, how to behave, and right and wrong from narrative analysis. The story format defines actors moving through a sequence of events, with victims, villains, heroes, and a conflict to generate our interest (Meister & Japp, 2002). According to the work of Lévi-Strauss (1987), a story (or "myth") unfolds in terms of oppositions, such as good/bad dichotomies. For journalists, the narrative format is efficient for reducing complexity and for collapsing a long span of time into an interesting summary (Johnson-Cartee, 2005). Studying the narrative of news stories is central to understanding how news reporters interpret culture and society.

Journalists create symbols of our shared world. Fisher (1984) writes that symbols are used in stories to give order to human experience and to establish common ways of living. For Fisher, narration is the means by which societies ultimately govern themselves; shared stories establish commonalities and create agreed-upon concepts of good and evil. As Hansen (1991) indicates, everybody analyzes media. This helps people achieve a pseudo-statistical understanding of public opinion on salient social issues and the players involved. Narrative analysis can reveal trends and patterns of social attitudes. These narratives shift over time, which can be observed via the leading print news source. Williams's (1977) structures of feeling theory helps explaining the shifts as reflected in the narrative over time.

Structures of feeling theory is used in communication studies to discuss social change. Williams (1977) argues that life and reality are always changing. Social opinions are observed in cultural products of a society, such as art and literature. Literature shares

similarities with news press media (e.g., linear tales expressed in text, containing characters, conflict, setting, etc.). Newspapers are a cultural product, both influenced and consumed by a public citizenry. Structures are "meanings and values with specific internal relations, at once interlocking and in tension, a social experience which is still in process, often not yet recognized as social but taken to be private, idiosyncratic, and even isolating, but which in analysis has emergent, connecting, and dominant characteristics" (Williams, 1977, p. 134). A structure of feeling can be related to the evidence of forms and conventions—semantic figures—which, in art and literature, are often among the first indications that a new structure is forming. This pattern reflects a trend that catches on.

Williams (1977) believes that the art of the day reveals crucial information about what a society values at present. So, too, do newspapers reveal values of a culture (Brennen, 2008). When artifacts are observed over time, we see that changes in cultural opinion are often gradual and complex. As Nisbet & Myers (2007) show in their poll study of public opinion over 20 years, an increased awareness of climate change occurred throughout the course of that time span. This finding raises a question about whether a similar shift can be found in news coverage. With that in mind, this study examines the story told by *The New York Times* over that same time.

Process of Analysis

In conducting a narrative analysis, this study selected a sample of 69 stories over 20 years (their selection process is described in the following section). I read all stories through and looked for symbols, words, and phrases that were used to describe climate

change. I wrote directly on the hard-copy article printout, and also made notes on a legal notepad divided in two columns, one side for notes and the other for notes on those notes. Of additional use was a spreadsheet in which I recorded character, setting, and action, which I coded in my notes, as well as date, title, and notes.

In performing the data analysis, I took notes on the overall plot development. I looked for reoccurring characters and subplots of the metastory for a summary, as well as a synthesis and integration across all stories. Additionally, I considered why a story element may be missing**,** both in certain stories and overall. However, the focus was on what *The New York Times* reporters said, not what was implied. I sought textual examples for action, character and setting descriptions. I identified expressive adjectives, evocative adverbs, suggestive quotes and meaningful citations. I recorded words used to describe characters and character groups. I categorized all main elements by setting, characters and action. I went back through the dataset and my notes to understand the shape of an overall metastory, which is presented in the analysis. A strong narrative of the climate change story emerged, as told in *The New York Times* over 20 years. I found evidence of how the story elements have changed over time by becoming more strongly weighted with evidence for the case of climate change as a real threat to humankind.

Newspaper Selection

The New York Times is a bastion of the news world; on a macrocosmic scale of news culture, it is an opinion leader from which the majority of newspaper industry learns and which provides an example to follow (Mazur & Lee, 1993). Opinion leaders

theory (Lazarfeld, Berelson & Gaudet, 1944) says respected subject-area authorities interpret news media messages for others, thus influencing their communities through word of mouth (with the assumption that humans are social in nature). Opinion leaders' interpretations influence public dialogue and/or trends through social interaction and debate. While opinion leaders are generally thought to be individual people, the title can be applied to social groups as well. In this study, *The New York Times* is considered to be an opinion leader of the press. Mazur and Lee (1993) argued that "The real initiator of national coverage is usually *The New York Times*, where one or a series of articles, especially on the front page, signals to other news organs that this is a story of major import" (p.710).

As an opinion leader, *The New York Times* becomes capable of intermedia agenda setting, which is the placing of certain issues or problems foremost in the press community's mind simply by making them salient in news coverage. This phenomenon is known as pack journalism, which refers to the tendency of reporters to travel in groups and provide uniform news stories. In issues of scientific risk, as the quantity of stories increases, so do public opposition and concern; conversely, as the quantity declines, so do audience worries (Mazur & Lee, 1993; Ungar, 1992). Mass media can have powerful agenda-setting effects, proven elsewhere (McCombs & Shaw, 1972). When media is shaped by other media, the source is said to be an agenda setter (Sweetser, Golan, & Wanta, 2008). Newspapers' agendas on issue importance influence not only the public's agenda of issue importance, but other media's agendas as well.

Sampling Method

Evidence of structures of feeling is examined in the selected coverage over time. A 20-year time period was selected because the nature of climate change coverage can only be understood if examined over time (Williams, 2001). This study uses the year 1988 as the starting point because it is the year when the IPCC was formed and, according to sources cited, the greenhouse effect hit the mainstream consciousness (McKibben, 1989; Ungar, 1992; Dispensa & Brulle, 2003). The coverage from each year begins and ends on April 22, Earth Day, a day that symbolizes awareness.

The selection of the sample of stories for this study was guided by Downs's (1972) concept of the issue-attention cycle to select the points in time for a sample, along with the results of Nisbet and Myers (2007) poll analysis showing high points in coverage as occurring when the issue of climate change was brought to the forefront due to dramatic events, like drought and heat waves. Considerable documentation exists that public concern about environmental hazards rises and falls with the volume of reporting (Allan, 2002, Mazur & Lee, 1993). In Hilgartner and Bosk's (1988) words, "global warming went from a social problem with celebrity status to a lesser problem kept alive by small communities of professionals and activists" (p. 57). The environment issue is a symbolic crisis; its problems have been with us for some time and are not likely to be resolved in the near future. Downs's (1972) issue-attention cycle offers a way to examine shifts of interest in an issue. Public perception of most crises reflects a systematic cycle of heightening interest, followed by a saturation/boredom effect and general public decline of attention. Something spectacular must occur to catapult the environment into a

salient issue again for the media and for most Americans. For it to remain on the public agenda, the issue and its events—both real and manufactured—must be thrust forward by the media, which then activates the public's sustained attention (Hester & Gonzenbach, 1995).

According to Downs (1972), public attention to issues such as the environment passes through five phases: (1) a pre-problem stage, (2) a period of alarmed discovery of the problem and eagerness to solve it rapidly, (3) the realization of the costs associated with solving the problem, (4) a decline in public interest, and (5) a post-problem phase, characterized by the settlement of public attention and sometimes the sporadic return of interest (Brossard et al., 2004).

Nisbet and Myers (2007) found that in a study of 20 years of public polls on climate change, there were strong connections between patterns in media attention to climate change and shifts in poll trends. Overall, an increase in coverage translated to an increase in public awareness. Other similar studies have also revealed this issue-attention cycle, or points of increased interest due to drastic occurrences, to be evident in the climate change discussion (Brossard et al., 2004). By pinpointing heightened periods of interest, stories for analysis were collected from the peak points during that 20-year stretch. The four high points of interest are during the years 1988-89, 1996-97, 2005-06, and 2007-08. This were determined by Nisbet and Meyers 2007 poll, which showed rising public awareness of climate change over time due to corresponding events that piqued the public's interest, triggering the issue attention cycle. 1988 marked the year of a severe drought and the year in which scientists first appeared before Congress to discuss climate change. 1996-97 was the year in which the first global treaty on climate

action was discussed in Kyoto, Japan, which the U.S. refused to sign. The year 2005-06 was the year of Hurricane Katrina, a severe tropical storm, which is considered a side effect of climate change. 2007-08, while not in the 2007 poll by Nisbet and Meyers, had the most front-page articles on climate change and so was included in the sample as well. Key events of 2007-2008 include rising costs of oil, record temperatures and the Nobel Peace Prize awarded to Al Gore and the IPCC for their work on raising climate change awareness.

The time periods and key events coverage analyzed are based on Nisbet and Myers (2007) tracking of the poll question, "Have you heard or read anything about the 'greenhouse effect' or not?" The answers are from approximately 1,000 respondents. Surges in awareness correspond to specific occurrences and thus lend support to Downs's (1972) issue-attention cycle theory; as a result of some dramatic series of events, the public suddenly becomes both aware of, and alarmed about, a particular problem. Using LexisNexis to generate a sample of articles from *The New York Times*, keyword searches of the phrases **greenhouse effect**, **global warming**, and **climate change** were entered to find articles from the four high points of coverage between 1988 and 2008. One criterion for selection was they had to appear on page 1, section A, as this reflects the emergence of ideas (breaking stories are front page, subsequent stories inside) and prominence of the story by the front-and-center placement. This selection process eliminated any stories that only mentioned the keywords in passing or were not a match—for example, stories about business climate change rather than the atmospheric weather crisis under examination. It only included stories about environmental issues, problems, and policies in which the keywords played a major role.

A total of 69 articles spread across the four events described in more detail below.

- April 22, 1988–April 22, 1989 (6 articles): "Yes" responses from 58 percent of participants in the Nisbet and Meyers (2007) poll study represent the first time more than half of the sample claimed awareness of the concept of a greenhouse effect. This corresponds to the key events of severe weather, such as heat waves and drought, across the U.S. at this time.
- April 22, 1996–April 22, 1997 (21 articles): "Yes" responses from 85 percent of participants in the Nisbet and Meyers (2007) poll study shows a late-1990s stabilization of the public's climate change awareness that remained steady through 2002. The timing corresponds to the key event of the Kyoto conference, a worldwide summit in Japan to explore the state of climate change.
- April 22, 2005–April 22, 2006 (14 articles): "Yes" responses from 91 percent of participants in the Nisbet and Meyers (2007) poll study implicated a huge majority in public awareness about climate change. The timing corresponded with a key event of Hurricane Katrina's aftermath, the most severe tropical storm to affect U.S. cities.
- April 22, 2007–April 22, 2008 (28 articles): Although Nisbet and Myers (2007) had no data on 2007, key events including the rising cost of oil, a pattern of record temperatures and severe weather, and recognition of Al Gore's book and documentary, *An Inconvenient Truth,* and the IPCC's work on climate change through the award of the Nobel Peace Prize drew the issue to the forefront of public consciousness this year, evidenced by 28 front-page articles on climate change and its effects.

In summary, this study explored the news media's portrayal of the climate change issue over time through narrative analysis. Opinion leaders theory guided the choice of *The New York Times* as a source of data, while Williams's (1977) structures of feeling theory guided my choice of narrative analysis as the study method. Downs' (1972) issue-attention cycle theory, which suggests that people (and by extension, the media) attend to problems when something drastic happens, influenced the sampling method choice of four points of newspaper climate change coverage over 20 years. As a result, this study was able to identify and track trends in the coverage that included an emphasis on weight-of-evidence reporting.

The next chapter is devoted to data analysis of the study.

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Data Analysis

The narrative analysis revealed that *The New York Times* used weight-of-evidence reporting in this sample, beginning with a tentative declaration of global warming by scientists on whom the paper conferred expert status, emphasizing scientific uncertainties, and then gradually pulled back as the scientific evidence of climate change became more heavily weighted one way. With its weight of evidence priorities and its climate scientists-as-experts in place, the paper created a metastory of climate change with climate change as an understood fact. Once established as fact, the paper's perspective, as will be shown, helped shape the metanarrative of climate change that appeared in *The New York Times* over a twenty-year period.

The New York Times journalists fashioned the climate change metastory as a classic narrative in the man-versus-nature tradition. Within the metastory, subplots developed that can be read as man-versus-man conflicts. Battles played out between villains, including political conservatives and industry leaders fighting for deregulation, and heroes, such as key Democrats and environmentalists fighting for global green initiatives and for victims of ecological crisis. News routines, including assigning sources to a hierarchy of attribution, shaped how *The New York Times* reporters told this story. An understanding of the narrative structure of *The New York Times*' meta-story will be useful to journalists who may seek an example of how to cover an issue of scientific risk.

Establishing Weight of Evidence

The New York Times reporters consistently conferred a mantle of authority on "consensus of climate scientists," including the IPCC, on the climate change issue. The first article in this study's sample was dated June 28, 1988 and titled "Global Warming Has Begun, Experts Tell Senate" (Shabecoff, 1988). This headline made a declarative statement about the veracity of climate change based on the word choice: the paper called the scientists "expert," as opposed to simply "scientist," as well as highlights the impressive audience in the "Senate." The story reported that Dr. James E. Hansen, director of NASA Goddard Institute for Space Studies, was said to have told a

> Congressional committee "that it was 99 percent certain that the warming trend was not a natural variation but was caused by a buildup of CO_2 and other artificial gases in the atmosphere. Global warming has reached a level such that we can ascribe with a high degree of confidence a cause and effect relationship between the greenhouse effect and observed warming" (Shabecoff, 1988, p. 1). As a leading expert, Hansen was prominent in the story.

Measuring *The New York Times*' evidence by the amount of source citations from both sides, dissenters of the climate change theory were cited only once and then only minimally in the first story; Shabecoff (1988) noted, "Some scientists still argue that warmer temperatures in recent years may be a result of natural fluctuations rather than human-induced changes." This story met the requirements of objectivity by balance—that is, the inclusion of two sides or opinions on an issue. However, the line quoted is not a strong statement because the attribution "some scientists" does not cite specific names of the protesting scientists, or with which organization they are affiliated, making their credibility questionable.

Notably, though, this first story emphasized great uncertainties in the science of climate change prediction. According to the story, scientists "cautioned that it was not possible to attribute a specific heat wave to the greenhouse effect, given the still limited state of knowledge on the subject" The next front-page story to follow this one, on July 19, 1988, focused on the summer heat wave (Wilford, 1988). Reporter Wilford queried more scientists for this story and found similar cautious confirmations of warming with uncertainties remaining. Dr. James Firor, climatologist at the Nation Center for Atmospheric Research, was quoted first in the story with this statement: "If the greenhouse gases continue to increase, and they seem to be going up, then the probability of heat waves could go up (Wilford, 1988)." The words "seem" and "could" weaken the declaration, but overall the quote indicated a trend toward confirmation of the science of climate change.

Uncertainties of climate change science took center stage in the article that followed on January 26 (Shabecoff, 1989). The story was headlined, "U.S. Data Since 1895 Fail to Show Warming Trend." *The New York Times*' copywriter's headline is implicitly deceptive because the U.S. is only 1.5 percent of the earth's surface, thus its measurements alone would not reveal a global scale of change, yet it suggests U.S. data alone is indicative of its claim at large. Even if scientists found no significant change in average temperatures in the U.S. since 1895, their finding does not account for the temperatures that were not measured on the rest of the planet; the article reported that Dr. Hanson pointed this fact out.

This article cited two scientists, Dr. James E. Hansen, who was cited earlier as the first scientist to address Congress confirming climate change and Dr. Kirby Hanson, a

leading meteorologist of the National Oceanic and Atmospheric Administration (NOAA). Dr. Kirby Hanson's agency had published an article showing that there had been no U.S. temperature trend one way or another over the last century. Despite the obvious confusion created by citing two scientists with similar last names, there is also room for misunderstanding because of the unclear syntax employed throughout the article, with double negatives and contradictory phrases. Dr. Hanson was quoted as saying the "findings do not necessarily 'cast doubt' on previous findings of a worldwide trend toward warmer temperatures, nor do they have a bearing one way or another on the theory that a buildup of pollutants is acting like a greenhouse and causing global warming" (Shabecoff, 1989, p.1). The reporter's quote choice reflected uncertainty; the phrase "does not necessarily" was noncommittal, and the quotation marks around 'cast doubt' obfuscated the meaning, as it is not clear what the quotes indicated.

Another group was cited in this story as saying that they agreed with the theory of a greenhouse effect, but that "there is no convincing evidence that a pollution-induced warming has already begun" (Shabecoff, 1989, p.1). In the same article, an atmospheric scientist at Oregon State University was quoted as saying, "There is no inconsistency between the data presented by the NOAA team and the greenhouse theory. But the new data is inconsistent with assumptions that such an effect is already detectable" (Shabecoff, 1989, p.1). An article like this demonstrates how coverage can confuse the public's opinion about the topic, as evidenced by Nisbet & Myers (2007) poll study, which shows much uncertainty in public opinion about climate change into the 1990s.

Despite *The New York Times*' reporters' early focus on climate change uncertainties, weight-of-evidence reporting on the issue gained strength over the years by

the changed emphasis of their stories, in particular between the 1988–89 and 1997–98 samples. By 1997, climate change was considered a close-to-verified reality. For example, one article (Stevens, 1997a) reported: "The dominant scientific view is that greenhouse gas emissions are probably responsible for at least part of a rise of 1 degree Fahrenheit in the average global temperature over the last century." In another article by Stevens (1997c), entitled "Experts Doubt Rise of Greenhouse Gas Will Be Curtailed," he cited "mainstream climatologists" as authorities on the issue, with the word "mainstream" implying that their views are widely accepted by society. He wrote, "While there are dissenters, a growing number of scientists and policy makers now say a doubling [of CO_2 in the atmosphere] may be unavoidable late in the next century" (Stevens (1997c, p.1). No mention of the stance or theory of dissenters is made. The reporter's omission of a dissenting point of view renders the latter irrelevant.

During 2005–2006, the newspaper moved beyond discussing the scientific veracity of climate change to showcasing examples of people taking action against climate change, such as its article about efforts by the New York State's environmental board attempt to make rules to cut auto emissions (Hakim, 2005). The reporters also continued developing in-depth stories of the places and people suffering because of climate change's vast and disastrous effects. The paper listed a city in Russia as an example. Vorkuta is a city that was built on permafrost (a layer of perpetually frozen earth that covers 65 percent of Russia's territory), and it was crumbling as the permafrost melted (Krauss, Myers, Revkin, & Romero, 2005b.) In the Arctic, besides documenting the accelerating melting of ice (Revkin, 2005b), *The New York Times* reported one effect that the climatologists could not have predicted. According to Krauss et al. (2005b),

indigenous tribes were being affected in response to the changes in their environment. For example, the Inuit word for June, *quqsuqqaqtuq*, refers to snow conditions and means a strong crust at night. Those traits, however, appeared in May, reported the article. Said one Inuit hunter, "June isn't really June anymore" (Krauss et al., 2005b, p.1).

Over time, the paper continued to document the victims of climate change and the constant deadlock in Congress that prevented action from taking place. The 2007–2008 study sample revealed weight-of-evidence reporting in the journalists' documentation of specific risks that governments were taking by failure to respond. According to one story, "melting ice sheets that could lead to a rapid rise in sea levels and the extinction of large numbers of species brought about by even moderate amounts of warming" (Rosenthal, 2007, p.1). The reporter's specificity of the consequences of climate change contrasted with the uncertainties expressed in 1988, when scientists were hesitant to make any predictions, or to even "attribute a specific heat wave to the greenhouse effect" (Shabecoff, 1988).

The newspaper continued to document progress made in the U.S. against climate change, affording additional evidence to support climate change as a known fact. For example, while Congress was still in heated debate over economic costs, the green movement gained momentum with the public, bordering on trendy. For example, the hybrid car by Toyota, Prius, whose low emissions make it a more eco-friendly choice of automobile, is reported to have maintained its public popularity longer than is usual for cars, presumably because of public acceptance of Prius's contribution to awareness of climate change due to its relatively low carbon footprint in terms of high gas mileage. Nisbet and Myers (2007) polling data showed the highest rate (91 percent) of national

public understanding and acceptance of climate change as fact in 2007. The climate change issue's salience was made clear by the quantity of 28 front-page stories during 2007–2008, the greatest amount for any single year between 1988-2008.

In summary, throughout the sample, *The New York Times* journalists accorded the status of climate change experts to the groups of people who embraced scientific consensus, including the IPCC. *The New York Times* documented scientific evidence over the years. The paper's coverage, through use of story tone and structure, shifted from an emphasis on scientific uncertainty to an emphasis on measured and accepted effects of climate change. Knowing this perspective helps us understand the metanarrative of climate change as told by *The New York Times* over a 20-year time frame*;* it is a tale in which the real antagonists and protagonists (man-versus-man conflict) emerged in full force.

Metanarrative

This section explores *The New York Times*' metanarrative as it unfolded over 20 years, from 1988–2008. The climate change story reflects a classic narrative in the man-versus-man, man-versus-nature tradition of conflict. From 1989 on, the narrative was told with climate change as an understood fact, and the conflict was a battle between villains of industry, along with political conservatives fighting for deregulation against global green initiatives, and heroes, such as Democrats and environmentalists, portrayed as underdogs fighting to protect the victims of the ecological crisis.

Within the metanarrative, objective reporting that represented voices from various sides of the argument was useful for creating conflict—a news value that generates interest. Drawing from literature's description of conflict, as depicted by *The New York Times,* climate change is a man-versus-nature metastory, in which humans are acting in relationship with their environment. Carrying the literary definition of conflict further, reporters used man-versus-man (heroes/villains) coverage to highlight political debates on climate change. Next, this study will turn to the analysis of narrative elements as they emerged in the story.

Setting. Mostly, the story of climate change as told by *The New York Times* unfolded in Washington, D.C. The issues reported in the metastory involved concerns of the U.S. primarily The paper highlighted politicians and their concerns, from President Clinton (who featured prominently as a source in 12 stories from 1997–1998) to President Bush (who was the main source of 8 front-page articles on climate change in 2005–2008). Economic issues were highlighted, particularly those in the U.S. because newspapers are a product of their local environments and reflect the prevailing concerns of their readership (Williams, 1977; Dunwoody & Griffin, 1999). The focus on the U.S. as the setting and a character in the story is significant to the global tale as well, since the U.S. uses a great quantity of natural resources, which contributes to this problem. *The New York Times*, as an American newspaper, emphasized problems that climate change created for the U.S. in particular.

While the setting for the metastory was primarily the U.S., other nations were also included due to the global nature of the central issue of climate change. Over the years, stories were told from the diverse locales of Australia, the Arctic, China, Japan,

Indonesia, and the Amazon rainforest in Brazil. The reporters' choice to set the stories around the world is key to this telling of this tale, as the global population shares the entire environment of this planet. The planet's common atmosphere—the "great aerial ocean," as Flannery (2005) called it—made worldwide consideration necessary. Whereas in 1989, *The New York Times* reported that the warming data being considered by Congress was localized to the U.S. (Shabecoff, January 26, 1989), by 1997, scientists had crunched the worldwide data for more accurate global trend readings that were being considered by the United Nations (Stevens, 1997c).

Throughout the sample, the settings outside the U.S., also served as characters, playing various roles such as victims, villains, and scapegoats for the press. For example, when the Kyoto Protocol was in the process of being promoted and adopted across the globe, the U.S. was adamantly opposed to the accord. Journalists reported that developing countries such as Indonesia have such pollution that "students can't see the blackboard" (Kristof, 1997a). Meanwhile, the U.S. justified its refusal to sign the accord by stating that its automakers were said to be "showing interest in fuel efficiency" (Bradsher, 1998a). Countries as characters were demonized as villainous, deregulated polluters, while other characters, e.g., Japan and France, were glorified as progressive toward change - Kyoto for hosting the discussion in 1997 and France's president Jacques Chirac for criticizing the U.S.'s wasteful ways (Erlanger, 1997). Such story construction potentially reflects the inherent social influence a community (the U.S.) has on its print news leader's reporting, making the latter less likely to tell negative stories about its audience to its audience (Dunwoody & Griffin, 1999). Inquiry into this possible motivating force is worthy of future study.

Action. Man versus nature was the underlying conflict in the climate change metastory, as human society struggled to harness its modern-life successes and excesses in order to preserve the natural world. The man-versus-nature conflict was observable in the reporters' repetition of a sacrifice theme; Americans in particular are portrayed by *The New York Times* as unprepared to alter high-consumption lifestyles to save the planet. One report pointed out that policymakers tiptoe around the "public's appetite for sacrifice" (Broder, 1997) while another story noted that U.S. consumers clamored for SUVs with more "zoom and room" (Wald, 2006).

While the man-versus-nature conflict is ever present in this tale*, The New York Times*' metanarrative notably began to focus on the man-versus-man conflict after scientists established climate change's weight of evidence. Whereas the 1988 sample of articles on climate change explained the science and established it as reality using the weight-of-evidence strategy, the 1997 articles used objective methods of reporting to relate man-versus-man conflicts. Objectivity is useful for the dichotomy inherent in narrative conflict structure, for it creates the conflict, which is a typical newswriting device that provides action and moves the story along. Ironically, this back-and-forth presentation tends to obstruct a final synthesis of ideas necessary to propel forward action on issues of scientific risk.

Because editors encourage journalists to recognize and highlight controversy, as discussed in earlier chapters, it's no surprise that reporters of *The New York Times* employed various sides of the argument to shape many subplots, advancing the story along to a still-unknown conclusion. One example of conflict set up by objective reporting methods occurred in 1997, when the economists weighed in against the

environmentalists' side of the argument (Stevens, 1997b). In Stevens's 1997 article entitled, "Doubts on Cost Are Bedeviling Climate Policy," he writes, "Industries that produce fossil fuels or use lots of them argue that serious economic damage would result if use of the fuels were significantly cut. Others, like environmentalists, say the economy as a whole would gain because it would use energy more efficiently." The article's narrative goes on to show the economists as "disputing the optimistic assessment" of five governmental labs that vigorous promotion of fuel efficiency "could reduce carbon emissions to 1990 levels by 2010" (Stevens, 1997b). The story is objective; it reports a clear conflict between energy activists and industry economists.

Another example of objective story using conflict between men as its narrative device was *The New York Times* article entitled "As Polar Ice Turns to Water, Dreams of Treasure Abound," regarding polar ice melting (Krauss et al., 2005a). One side represented in the story was the Canadian city of Churchill that had the potential to "bring in as much as $100 million a year as a port on the Arctic shipping lanes were shortened by thousands of miles…and traffic would only increase as the retreat of ice in the region clears the way for a longer shipping season." The reporter also presented an opposing perspective, the Inuit viewpoint. The journalist reported that four million Inuit within the Arctic Circle were among those who "hunt and fish and travel on that ice." These types of articles by *The New York Times* proposed multiple points of view, as the objectivity norm suggests. Their inclusion creates drama and tension in what could be a an otherwise bland business story or meteorological report.

The New York Times news writers continually developed subplots through a series of man-versus-man conflicts, as ecology's defenders and economy's advocates clashed in

the halls of Congress, at global conferences, and in state courts. In an article titled, "Battle Lines Set as New York Acts to Cut Emissions," journalists employed language that indicated definitive "battle lines" were drawn, pitting the regulatory bodies against industry. These groups were portrayed as two sides fighting each other without compromise (Hakim, 2005). Objectivity presents an easy opportunity for journalists to provide balance and disagreement, as well as satisfy the news value criterion that asks, "Is it interesting?" Objective reporting methods were useful for this article, even though they tended to simplify the complexity of the issue into opposing voices. Overall, the action was presented as conflict between antagonists of industry and protagonists of regulation. The next section describes these characters in detail.

Characters. The character element intertwined with the action to drive the metanarrative. Characters act out conflict in the story through protagonist and antagonist roles. As social creatures, humans are naturally curious about each other. Thus, journalists use characters to draw readers in and to maintain their interest, because an issue is only as interesting as the people it affects. Several social groups were implicated in the climate change metanarrative as actors, which this section will explore in depth. Scientists emerged as experts; policymakers, corporate interests, environmentalists, and citizens/consumers emerged as heroes and villains; and developing countries, the natural world, and all species emerged as victims.

In literature, readers identify with characters. Newspaper narratives also use characters to hook readers. For *The New York Times* journalists in this study, political ideologies, conservative and liberal, served as convenient adversaries because it is a familiar dichotomy to many citizens who use political party symbolism as shorthand for

their own and others' ideological identities. In the U.S., and as reported by *The New York Times*, the Democratic Party is affiliated with the environmental causes and Republicans support industrial deregulation. Based on such political parties' affiliations, the good guys (heroes) and bad guys (villains) emerged when it came to the issue of fixing the problem of climate change. The following sections discuss experts, villains, heroes, and victims in turn.

Experts. Early in the metanarrative, scientists were depicted as the experts of climate change (Shabecoff, 1988), but anthropogenic climate change was not accepted as fact until the evidence became more conclusive later in the data sample (Stevens, 1997c). Eventually, the existence of climate change was no longer debatable in the front-page stories of *The New York Times*; any debate became a nonissue as climate change was established as a proven fact according to the newspaper's primary source of respected climate experts. The climate change theory gained support as scientists linked severe weather to climate change (Stevens, 1998) and other damaging effects began to be experienced over time, such as sinking cities (Krauss et al., 2005b). By 1997, climate change as reality became an understood assumption, and the newspaper's narrative interpreted climate change as a given truth. It progressed beyond saying "climate change is/is not a real problem" and became a tale of the battle between industry, activists, and policymakers as one side made efforts to fix the problem.

According to one of the more prolific journalists, Stevens (1997e), in narrating the story of climate change during the late 1990s, wrote that more scientists began to agree that "doubling of CO_2 will be hard to avoid" and "unavoidable changes are in store, we will have to adapt." Over time, the relationship of skeptics to corporate interests began to

be made clear in the metastory, and the newspaper began to reveal fraudulent claims. *The New York Times* used weight-of-evidence methods when it went beyond source citation (just getting the quote accurately) to investigating quotes' truthfulness. Its investigations revealed that the main opponents to climate change theory were not scientists, but rather spokespersons for industry and automakers who were fighting against any regulations on emissions due to the possible economic distress it could cause. Stevens concluded that:

> There is general agreement that reductions of emissions would come at some cost to the economy and that the size of the cost depends largely on the size of the cuts and how rapidly they are carried out.
>
> Energy costs would very likely rise, at least for a time, and some industry sectors, it is generally agreed, could be hit hard if they were not able to adapt quickly enough (1997b).

In noting this, *The New York Times* coverage indicated that oil and auto industries with a conservative political agenda were responsible for advancing the view that climate change is a normal, natural occurrence. In pointing out the link between industry and supposed science, it cast doubt on these claims by spotlighting the industry's financial interests.

Climate change became a given as the metastory unfolded, and the battles over economic disruption or regulation became the focus of the debate. At the same time, critics of climate change theory, including conservative politicians, tended to claim uncertainty about the science of climate change, in keeping with Dunwoody's (1999) assertion that uncertainty is sometimes used as a rhetorical tool. For example, the paper reported on former Republican President George W. Bush's insistence in 2005 that more research was necessary before he would formally admit that climate change was real (Revkin, 2005a) thus justifying the U.S. decision against signing the Kyoto Protocol.

For better or worse, politicians such as President G. W. Bush were sourced and written about nearly as much as the scientists in this narrative. In fact, politicians were primary characters in roughly half of the articles studied. In *The New York Times*' climate change discourse, the forum of formal political activity was at the source center, along with the scientific community, reinforcing Hansen's (1991) findings. Some of the politicians were portrayed as heroes in the metastory, while others appeared as villains.

Villains. Villains are defined not only by what they do, but also by what they will not do. In the newspaper's metanarrative about climate change, the U.S. is depicted as "evil" due to its resistance to signing global pacts designed to reduce climate change, starting with Kyoto in 1997.

The global governmental parties met in Kyoto, Japan, in December 1997. There, the negotiators developed the Kyoto Protocol, which enjoined industrialized nations to reduce greenhouse gases to 5 percent below 1990 levels between 2008 and 2012 using three mechanisms: *(a)* emissions trading, *(b)* joint programs among industrialized countries, and *(c)* clean development mechanisms involving joint projects between industrialized and developing countries. The Kyoto Protocol required ratification by 55 nations responsible for 55 percent of 1990 greenhouse gas emission production, which meant ratification by the U.S. was necessary. However, the U.S. government refused to ratify the protocol, the only international climate treaty in existence. The journalist Cushman Jr. wrote in his article entitled, "Top Aides Urge Clinton to Ease Global Warming Emission Goal," that even the Democrats' good intentions were not enough: "To the dismay of environmentalists seeking swift action to toughen the international treaty on climate change, President Clinton's senior economic and environmental advisers

are urging him to delay until the year 2010 and beyond the time when the United States and other industrial nations must achieve deep new reductions in the pollution that may cause global warming" (Cushman Jr., 1997b).

The opponents of the treaty in this story included industry representatives and conservative politicians, such as Senator Chuck Hagel, a Nebraska Republican. According to one journalist, "Opponents of the treaty condemned it as economically ruinous" (Stevens, 1997d). The paper reported that multinational oil companies; oil-dependent industries, such as automobile production; and oil-producing economies, such as Saudi Arabia and parts of the former Soviet Union, all lobbied against the U.S. government signing the treaty (Cushman Jr., 1997a; Bennet, 1997a). According to the *New York Times'* metastory, international cooperation is necessary due to the global scale of climate change, so the U.S. appeared as the major contributor to the problem by refusing to participate in the solution.

Villains in *The New York Times'* metanarrative were depicted as untrustworthy sources who said one thing and did another. *The New York Times* pointed out the discrepancies between the Bush administrations' words and actions by reporting contradictory quotations to their actions in its stories on climate change. Both of the Republican Bush administrations were called out in this metanarrative for employing rhetoric to cast themselves as ecology-minded. For example, in 1988 George H. Bush Sr. promised to be "the environmental President," while also being a strong supporter of the oil industry on the building of the Alaska oil pipeline. In early 1988, the paper reported the President as saying, "The caribou love [the pipeline]. They rub up against it, and they have babies" (Dionne, 1989). The paper portrayed G. W. Bush as claiming that his

administration would set goals to solve the climate change problem, but then siding with industry again and again against regulations on emissions (Revkin, 2005a; Andrews, 2007a, 2007b; Stolberg, 2007).

If a source was in collusion with industry, the newspaper revealed this influence. In one 2005 story, a G. W. Bush aide was a former lobbyist for the American Petroleum Institute who played down the link between climate change and emissions (Revkin, 2005a). The headline "Bush Aide Edited Climate Reports" indicated that political appointees sought to control the flow of scientific information (Revkin, 2005a). The article described actions as subtle, with the economic aide's insertion of the phrase "significant and fundamental" before the word "uncertainties" in climate reports from NASA to Congress; the phrase produced an air of doubt about findings that climate experts had said were robust (Revkin, 2005a). The article's focus on the minutiae of language reveals its weight-of-evidence stance, which became stronger as the evidence of climate change mounted.

Journalists pointed out the role of business interests in the metastory. One reporter (Stevens, 1997a) wrote, "The reason [doubling of CO_2 cannot be curtailed], they [scientists] say, is that the world's economic and political systems cannot depart from business as usual rapidly enough." This statement implicitly placed blame on all industrialized countries and their citizens, as well as created a clear image of defensiveness and aggression from U.S. industrialists. In this narrative, business lobbyists and CEOs pressured the federal administration to avoid the Kyoto Protocol, protesting the costs they would incur on business. *The New York Times* cited several examples of conservatives' confrontational (as opposed to cooperative) language. One conservative

was quoted at saying: “We don’t sacrifice for anything” (Stevens, 1998); another called regulations a “crushing blow” (Cushman Jr., 1997a); while another observed that “There is no way this [Kyoto Treaty] will get through Congress,” (Bennet, 1997c). Such strong statements build an uncompromising image of the antagonists in *The New York Times*’ metastory. *The New York Times*’ coverage lends support to Nisbet and Myers (2007) claim that, given the political stakes involved, the scientific findings specific to climate change have been selectively interpreted by various groups, depending on the groups’ interests. For example, one reporter wrote, “Automakers…contend that standards will actually harm the environment by leading to ‘the jalopy effect’ because higher initial car prices will discourage people from trading in older models that pollute more than newer ones” (Hakim, 2005). By citing such statements, reporters cast automakers as resistant to change.

The New York Times reported another instance of the manipulation of scientific findings in the article entitled, “NASA Chief Backs Agency Openness” (Revkin, 2006). Revkin reports that the NASA chief felt compelled to issue a statement backing scientific openness in the agency after “political appointees had sought to control the flow of scientific information from the agency.” Political appointees altered NASA press releases to mesh with Bush administration policies (Revkin, 2006). These manipulations fit the political goals of elected officials, interest groups, and even scientists, corroborated in Sample’s (2007) article, which reported “Scientists Offered Cash to Dispute Cimate Study,” published in *The Guardian,* a British national daily newspaper.

The narrative portrayed natural resource–reliant industries as having a vested interest in promoting inaction on the environmental change, thus allowing for continued

extraction of natural resources. Of note was the U.S. auto industry, which somehow managed to portray itself as doing the right thing, while not actually taking any action. These headlines: "Auto Makers Plan Cuts in Emissions of Sport Vehicles" (Bradsher, 1998b) and "U.S. Auto Makers Showing Interest in Fuel Efficiency" (Bradsher, 1998a) are suggestive of good corporate action, but did not indicate a true commitment. Post-Kyoto in 1998, U.S. automakers revealed plans for 60- to 80-mile-per-gallon cars (Bradsher, 1998a), yet these never materialized in the market. In 2007, the Toyota Prius had the best mileage (48/45 miles per gallon) that a car could get (Maynard, 2007). According to the story, Hakim's (2005) source, David Friedman of the Union of Concerned Scientists, some previous statements by the car industry include:

> "They said that seat belts would put them out of business; they said that air bags would put them out of business; they said fuel economy and emissions regulations would all put them out of business," said David Friedman, a senior analyst at the Union of Concerned Scientists.
>
> "It turns out it's their unwillingness to innovate that's putting them out of business right now," he added, referring to the current struggles of General Motors and Ford Motor Company (Hakim, 2005).

Even though the U.S. economy benefited from deregulation at cost to the environment, *The New York Times*' narrative avoided this angle; rather its metastory focused more on the conflict between industry and policymakers. Any ecological damages discussed in depth were portrayed as the fault of developing nations polluting their own environments.

In the story of climate change as told by *The New York Times,* developing nations such as Brazil, India, and China were shown as having severe pollution problems. Reporters depicted these countries as creating unprecedented pollution as they industrialized. Said one condemning headline, "Amazon Settlers Turn Forests to Ash in

Name of Progress" (Simons, 1988b). Another headline said: "Vast Amazon Fires, Man-Made, Linked to Global Warming," and the story served as an early warning for problems that would not be solved for years (Simons, 1988a). Certain language cast developing nations as perpetrators as well as victims of their own unregulated pollution, which led to illness and deformation. The headlines, "Asian Pollution Is Widening Its Deadly Reach," (Kristof, 1997b) and "Across Asia, a Pollution Disaster Hovers" (Kristof, 1997b) contain loaded phrases that indirectly cast blame on Asia, and shifted it away from the U.S. Kristof (1997a) supported this claim when he reported that "Asian polluters are not merely sullying their own countries but are creating environmental catastrophes that cross international boundaries and create a burden for the entire planet." As time passed, though, *The New York Times* documented climate change's effects on U.S. soil as well as abroad. For example, one of its articles reported, "Coastal erosion is a problem in Alaska as well, forcing the United States to prepare to relocate several Inuit villages at a projected cost of $100 million or more for each one" (Krauss et al., 2005b).

Between 1997 and 2005, the paper's storytelling visibly changed to reflect a shift in underlying structures of feeling, from uncertainty to action. For example, in 1997, an article published in *The New York Times* contained this vague quote: "The future severity of climate change is uncertain enough, and its future physical impact on particular countries and regions is more so. The uncertainty multiplies yet again when people try to calculate the costs and benefits of taking action to reduce greenhouse emissions" (Stevens, 1997b). With mounting evidence over a few short years, however, its reporters described climate change's true effects with more confidence, saying, for example, that

"permafrost…thaw itself is already causing widespread anxiety," and that "pelts of fox, marten and other game…were thinning…and slushy snow and weaker ice has made traveling by snowmobile impossible in places," (Krauss et al., 2005b). These later articles also documented what actions were being taking to counteract climate change's effects. For instance, the first story of the 2005 sample was about Japan, where all public and private offices, in a bid to save energy and reduce output of carbon emissions, were beginning to set their air conditioners at 28 degrees centigrade (82.4 degrees Fahrenheit). The story reported that the reason was that 79 percent of respondent to a Japanese poll said they believed that global warming was their own personal problem (Brooke, 2005a).

This reporting of elevated consciousness of the realities of climate change appears to correlate with the findings of Nisbet and Myer's (2007) poll study, which documented the highest-ever levels of public awareness of climate change in 2005 (92 percent). Since 2007, as the U.S. has approached peak oil (the period in which petroleum becomes a diminishing commodity), and consumers have begun to demand greener and more fuel-efficient technologies and services. However, as a 2007 article in *The New York Times* points out, automakers and the corn, petroleum, coal, and nuclear industries were subsidized, deregulated, and promoted in U.S. legislation (Revkin & Wald, 2007). The headline "Lawmakers Push for Big Subsidies for Coal Process" in 2007 is one example of politics catering to industry revealed by the newspaper's metanarrative. Journalists reported that turning coal to liquid fuel releases twice as much CO_2 as diesel (Andrews, 2007), and thus coal is not an eco-friendly industry.

Despite inherent problems with nonrenewable energy, in *The New York Times*' metanarrative, Americans consumed resources at a rapid pace. U.S. citizens were

portrayed as consumers demanding products that were the most desirable (more "zoom and room") and/or economically viable (Wald, 2006). As recently as 2007, automakers defended their luxury products based on consumer demand, at the expense of fuel economy. One article read, "The Big Three automakers have warned that complying with the new fuel economy rules will cost them tens of billions of dollars and rob consumers of choices" (Broder & Maynard, 2007). According to *The New York Times*, citizens claimed to be interested in solar power, but not interested in the expense to invest in the technology (Revkin & Wald, 2007). While the paper made it clear that the effects of climate change affect all of us, the metanarrative also clearly indicated that consumers did not seem to care.

Heroes. In contrast to conservative stonewalls and argumentative actions by industry, heroes in this metanarrative were depicted as those who championed the earth's resources as deserving of conservation and respect. These heroes sought out a compromise with industry that would prevent climate change's worst effects. As told by *The New York Times,* the Clinton administration in 1997 asked the public to accept climate change theory and the implementation of carbon tax, as well as to promote fuel efficiency over time (Bennet, 1997a; Stevens, 1997a; Bennet, 1997b). Coverage in 1997 showed that the Democratic Clinton administration was more willing than previous Republican administrations, such as George H.W. Bush's, to work toward resolution. The paper reported that environmentalists criticized the government (both Democratic and Republican parties) for "achingly slow" progress (Revkin, 2005c). Al Gore, U.S. vice president at the time, was instrumental in orchestrating actions to sign Kyoto, but Congress denied the administration's efforts. The paper reported that some lawmakers

vowed to "kill this bill" (Bennet, 1997c), at the behest of oil and auto industries. Clinton appealed not only to industry and the United Nations to "take global warming seriously" (Stevens, 1997a; Bennet, 1997a), but he also reached out to journalists, emphasizing that newsmakers have "the ability to shape dialogue" on the issue (Bennet, 1997b).

In this metanarrative, journalists were depicted as up to the challenge of fomenting change; thus, the press cast itself as a hero of sorts. Beyond sourcing reliable information from the scientific consensus, *The New York Times* paid attention to details that suggested journalists were using weight of evidence as their guide in reporting these climate change stories. Weight of evidence made it possible for journalists to encourage action. For example, in 1997 the paper covered the Clinton administration's requests asking people to accept climate change as real (Bennet, 1997b), in accordance with the newspaper's stance of climate change as reality (Shabecoff, 1988). The endorsement of the theory of by a U.S. president added evidence and support to a structure of feeling that was becoming established.

In 2005, *The New York Times* challenged U.S. policymakers by following stories of more progressive nations that were increasing legislation to curb emissions, in contrast to the G. W. Bush administration. For example, one story reported on how the Japanese government "introduced a national campaign, urging the Japanese to replace their older appliances and buy hybrid vehicles, all part of a patriotic effort to save energy and fight global warming" (Brooke, 2005b). Such evidence of other countries' initiatives was used to encourage action. Journalists at *The New York Times* leaned on hard evidence weighted by scientific consensus when they revealed that the collusions of the G. W. Bush administration with the auto and oil industry (Revkin, 2005a) between 2000 and 2005

slowed progress toward needed policy changes, despite pressure from other developed countries (Revkin, 2005c).

On a global scale, other nations were presented as heroes battling the villainous U.S. in the metanarrative. *The New York Times*' coverage depicted other industrialized countries as generally more progressive than the U.S. and suggested that the ratification of the Kyoto agreement to reduce emissions in 1997 exerted pressure on the U.S. At this time, according to the newspaper, the U.S. was starting to look very bad in the eyes of the international community by its refusal to sign on. In one of its articles, France's Jacques Chirac was cited calling the U.S. "major polluters" (Erlanger, 1997), an international attitude toward the U.S. that appeared to change little over time. If anything, according to the metanarrative, it got worse.

The New York Times continually cited examples of other countries' progress during this 20-year period, making U.S. contributions conspicuously absent. Some countries, like Norway, set an example by acknowledging the "petroholic" culture and aiming to become carbon neutral by 2050 (Rosenthal, 2008). This story suggested that the U.S. missed the opportunity to set its own example when it resisted reducing emissions. In another story, the U.S. was portrayed as not supporting international policy agreements like Kyoto, because the move may have put the country at an economic disadvantage: "Opponents of the treaty condemned it as economically ruinous" (Bennet, 1997c). Activists in the metanarrative claimed that the U.S.'s given reason for not signing Kyoto, i.e., because it did not contain resolutions for developing countries, was a ruse developed to satisfy industry (Bennet, 1997c). In fact, as stated in Stevens' (1997b)

article, environmentalists "say the economy as a whole would gain because it would use energy more efficiently" if it signed on to Kyoto.

Activists and citizen heroes were located toward the bottom of the source hierarchy in *The New York Times* metanarrative. Environmentalists were most often quoted by its reporters at the end of articles, showing the low value placed on their voices. According to Brown (1992), community activists repeatedly differed with scientists and government officials on matters of problem definition, study design, and interpretation of findings and policy applications, which may explain, in part, the source placement in these stories. The press accounts indicated that Congress, too, placed a low value on activist concerns. In one article, politicians called hybrid car owners "pious Prius" owners and the derogatory term "tree huggers" (Maynard, 2007). The headline "Solar Power Captures Imagination, Not Money" (Revkin & Wald, 2007) is an example of the financial distress theme commonly found in activists' complaints. Despite small wins, activists were quoted as saying, "We're out-lobbied by corn, oil and coal when it comes to alternative fuel sources and regulation" (Revkin & Wald, 2007). *G*roups described by *The New York Times* as supporters of the environment, such as Sierra Club, Greenpeace, and the National Audubon Society, were portrayed as skeptical of industry and political rhetoric, and they consistently pressured the administration for reduced emissions regulations, but met with limited success (Goldberg, 1997; Stolberg, 2007).

Victims. The New York Times' metanarrative depicted members of the global population that chose lifestyles that led to environmental devastation as both villains and victims. According to its metastory, some global citizens are clearly innocent victims of climate change. These included Chinese people suffering from deformities due to nearby

unregulated air and water pollution (Kristof, 1997a), and the native Inuit whose homes and cultures were being destroyed by encroaching industry on lands now seasonally hospitable to development because of climate change (Krauss et al., 2005a). One sympathetic headline read, "Old Ways of Life Are Fading as the Arctic Thaws" (Krauss et al., 2005b). Other blameless victims of climate change included bio-communities, such as coral reefs or animals, whose habitats were being destroyed. In this way, *The New York Times* portrayed the natural world as a victim of climate change, too.

In this metanarrative, a disadvantage suffered by one character might serve as an advantage to another. Melting ice caps meant different things to different characters; for the animals that live in the Arctic, sinking ice floes and coastal erosion meant loss of habitat, while for human industry, it meant gaining a seasonally open sea (Krauss et al., 2005a, 2005b). Hanging heavy over the metanarrative is the underlying message of humanity's victimhood; *The New York Times* implies that our civilization has perpetrated this unto itself by allowing vastly beautiful, fragile landscapes to be lost forever.

Overall, a strong narrative of climate change that suggested weight-of-evidence as a reporting strategy was employed on the front pages of *The New York Times* over 20 years. The plot development involved reoccurring characters and subplots in the climate change metastory that allowed for synthesis and integration across all stories. The overarching narrative suggested that scientific, political, and public consensus on climate change increased from 1988 to 2008. This suggestion is reflected in the finding reported by Nisbet and Myers (2007) in their poll study, which showed growth of public awareness of climate change.

Doubts cast on the veracity of anthropogenic climate change early on in the narrative were clearly illuminated by the paper's spotlight on measured scientific inquiry and agreement. Journalists cast the players in the drama as heroes, villains, and victims, depending on whether they were viewed as advancing the solution to the climate change problem or holding it up. The interpretation of the characters and their roles rested on the journalists' assumption that climate change, as agreed to by the majority of scientists in 1989, was indeed a fact, exhibited through weight-of-evidence reporting. Objective reporting was useful in displaying the ongoing conflicts between the arguing sides on climate change policy formation, as well as industry's resistance to regulations.

This analysis has revealed how the paper covered an important issue involving scientific risk, basing most of its reporting since 1989 on the consensus of scientists stating that climate change is a fact. Based on the public opinion polls studied by Nisbet and Myers (2007), a general growth pattern of increasing public acceptance about the climate change issue over time reflects the weight-of-evidence understanding, as reported by *The New York Times*. The weight-of-evidence concept was important to the newswriting process regarding the issue, because it would be virtually impossible to say that one source's version of the truth is as accurate the other's, especially when they completely contradict each other, and still accomplish significant changes to environmental policy and consumer lifestyles. Knowing that one's audience is at risk is cause for action on the part of journalists to educate and inform the citizenry of the most accurate claims and facts.

In summary of this chapter, *The New York Times* gave mainstream climate scientists expert status on the source hierarchy, in line with weight-of-evidence reporting

priorities. From that point, its narrative was told with climate change as an understood fact. Overall, scientists argued that climate change was real, and *The New York Times* reported it as fact for over 20 years. The narrative progressed beyond saying "climate change is/is not a real problem" and became a tale of the battle between industry, activists, and policymakers on what was the best course of action to fix the problem.

Climate change is a classic narrative in the man-versus-man, man-versus-nature tradition. The conflict came to focus on a battle between antagonists involved in industries that fought, along with political conservatives, for deregulation against green global initiatives, and protagonists, such as Democrats and environmentalists, supporting those initiatives and fighting for the victims of the global crisis. Traditional news routines shaped how *The New York Times* reporters told the story. Weight of evidence was strengthened over time and likely shaped the shift in the narrative from reporting uncertainties toward articulating specific evidence of climate change. The narrative is significant because *The New York Times*' holds considerable status as an intermedia agenda-setting opinion leader.

The final chapter will summarize this study and offer critique.

Conclusions/Discussions

This study has found that journalists at *The New York Times* engaged in weight-of-evidence reporting when telling the story of climate change to its readers during the past two decades. They determined where the bulk of evidence and expert thought lay regarding the veracity of climate change, and then communicated that information to its audiences. Using this method, the paper transmitted the scientific community's risk warnings to the public as accurately as possible. Accuracy, in this context, is defined in relation to how the majority of scientists within the scientific community viewed the issue of climate change. The newspaper gave more weight to the assertions of majority of climate scientists than to the rogue voices within the community.

This strategy is particularly valuable when reporting issues of scientific risk. The SPJ Code of Ethics emphasizes that journalists must minimize harm when reporting. Conventional objective reporting is an inappropriate approach to use when reporters are covering issues of evolving science whose claims may have potential negative risks to human welfare. In such situations, the more ethical choice may be weight-of-evidence reporting, which should be employed when a story involves a controversy in which both science and society have agreed that truth lies more firmly on one side than on the other (Dunwoody, 1999).

Williams's (1977) structures of feeling theory helps explain the shifts as reflected in the narrative over time. Structures of feeling theory is used in communication studies to discuss social change. Williams (1977) argues that life and reality are always changing. Social opinions are observed in cultural products of a society, such as art and

literature. Like literature, art, film, and television, newspapers are a cultural product, both influenced and consumed by a public citizenry. A structure of feeling can be evidence that a trend catches on. Williams (1977) believes that the art of the day reveals crucial information about what a society values at present. So, too, do newspapers reveal values of a culture (Brennen, 2008). When observed over time, we see that changes in cultural opinion are often gradual and complex. As Nisbet & Myers (2007) show in their poll study of public opinion over 20 years, an increased awareness of climate change occurred throughout the course of that time span. This finding raises a question about whether a similar shift can be found in news coverage. With that in mind, this study examines the story told by *The New York Times* over that same time.

Williams's (1977) structures of feeling theory aids understanding of how coverage and public opinion have co-developed over time. The structure of attitudes toward climate change as fact was accepted first by scientists, later by ecology's champions (Democrats and environmental activists), then by the media opinion leader *The New York Times*, and finally by the public at large, as reflected in public opinion surveys (Nisbet & Myers, 2007). Predictions for the future constantly evolved during the years of the coverage examined. This reflects structures of feeling, when the climate change ideas become adopted as they are observed and understood. The climate change phenomenon's evidence shifted and, with it, the newspaper's coverage of scientific consensus, providing more proof of weight-of-evidence coverage. The future is a place of prediction, hopes, vague estimates, and fantasy. Some of the direst doomsday forecasts of 1988, such as sinking coastal cities (Simons, 1988), became real-life occurrences in 2005 (Krauss et al., 2005b). Politicians vowed in 1997 to support scientific studies and to act

on their findings as needed, predicting the economy will need adjusting to make change (Cushman Jr., 1997c). This finally begun to happen in 2007 as the green movement took hold in politics (Maynard, 2007).

Despite the increased public awareness of climate change, there still doesn't seem to be a uniform response regarding what to do about the problem. Hence, a man-versus-man conflict is still evident in the final years of the data sample. Some citizens and countries have clearly adopted behaviors that suggest they have shifted toward green practices and sustainable solutions, but others, i.e., coal lobbies, etc., continue to press forth with nonrenewable, unclean energy practices in the name of economics, which they claim will suffer if industry doesn't continue with business as usual. This reported conflict suggests that the underlying structures of feeling remain, in part, in a state of flux.

Downs's (1972) issue-attention cycle theory points out that attention to problems only comes when something drastic occurs. Thus, public response to the alarming heat and drought during the summer of 1988 turned inquiry into the greenhouse effect into a more mainstream issue, though climate change had yet to be recognized and confirmed as a reality. The issue-attention cycle revealed itself in the newspaper throughout the years as the coverage of the climate change problem peaked and receded, and is reflected in the setting – that is, time and place of climate change coverage. Localized natural disaster events across the U.S. (outside of Washington, D.C.) also received a lot of newspaper exposure when they started to happen more in 2007, such as the fires in California and droughts in Alabama and Georgia (McKinley and Johnson, 2007; Nossiter 2007). Then, coverage clearly dropped off after the events. For instance, few front-page stories

appeared after the Kyoto talks, and the aftermath of the fires and droughts did not warrant front-page coverage after the initial disaster stories. The initial high-profile coverage of an event followed by a clear lack of coverage later implicitly suggests that the problem was considered no longer urgent.

In portraying the U. S. culture as a sometimes villain in this narrative, *The New York Times* acted on its journalistic obligation to inform the public as citizens rather than as consumers. Distinguishing the citizen from the consumer presents an enormous challenge for journalists for two reasons. First, citizens and consumers are not necessarily expected to respond the same way to a problem. In buying an automobile, for instance, the consumer makes choices based on preference and performance, but does not necessarily consider eco-friendly features. While consumers might not pay attention to ecological matters, citizens should if they wish to fulfill their civic duty to preserving the environment. In general, consumer choices are thought to reflect solely self-interest, while citizens are expected to be motivated by more altruistic concerns when making collective decisions for society at large (Croteau & Hoynes, 2001; Kraft & Kamieniecki, 2007). In reality, this simple binary is much more complex, as the majority of the readership is both citizen and consumer. The newspaper must address the multiple facets of its readers' roles in life.

Second, in treating its readers as citizens in the case of the climate change story, the newspaper ran the risk of alienating members of its audience who found themselves uncomfortable when faced with the prospect of altering their lifestyle choices vis-à-vis climate change. Climate change is difficult for people to evaluate dispassionately, because it entails deep political and industrial implications and, as Flannery (2005) notes,

"it arises from the core processes of our civilization's success" (p. 4). Industry has brought society many good things, but it has also created environmental ills. To address climate change, the U.S. economy and energy industry requires a major transformation, a shift away from reliance on petroleum and coal as a major energy source, which could cause temporary discomfort as society retools itself for a post-peak-oil world.

At the same time, civilization forms a site independent of the imperatives of the market economy. A democratic and open society is premised on the free flow of information among its citizenry, thus an open media is vital to the functioning of a civil society (Croteau & Hoynes, 2001). Through open communication, citizens can develop an ethical life and exercise their citizenship through the formation and maintenance of what Habermas (1987) calls the public sphere. The public sphere provides society with a self-reflexive capacity to adapt to changing circumstances.

Though newspapers are neither crystal balls nor pulpits for those at the center of the source hierarchy, they have a moral responsibility to their readers to accurately inform them of the threats to human welfare. With fair warning and actionable information, citizens can make decisions in their own best interest. Newspaper writers must meet their audience's needs by treating it as an active citizenry first and foremost, instead of as consumers. In this metastory, one gets a sense of the agonizingly slow progress that occurs when bureaucracy tries to regulate free market conditions. Newspapers can continue to report one story of the deadlocked between two sides, industry and ecology, or it can ethically inform the citizenry with mobilizing information. This approach has made visible headway in 2007–2008, with the mainstream exchange of the green movement in public discourse and media.

The consumer/citizen dilemma may lie at the heart of the U.S.'s inaction on the climate change issue. Drawing again on literature's concepts of conflict, it boils down to a man-versus-himself dilemma. Against his better judgment, the selfish consumer side wins out against the responsible citizen. For example, people tell their representatives they support green initiatives, but then they continue to consume fossil fuels. Many fail to consider the carbon footprint of the groceries they purchase or the amount of long flights they take. The public's appetite for sacrifice, as described by *The New York Times,* is minimal in this narrative (Broder, 1997). Further, due to the discomfort that people may feel about the climate change issue because it implicates modern lifestyles as part of the problem, sensitivity around the topic can significantly hinder candid discussion. News journalists, however, must be frank with their audience when they believe that the preponderance of evidence weighs in favor of one point of view rather than another. For the greater good, they should provide a convincing argument for individuals to begin the process of mobilizing for change in issues of risk.

As shown in this study, weight-of-evidence reporting eliminates confusion so that the public can be accurately informed on who is telling the truth about an issue and who has ulterior motives. Only when the stakes are defined as accurately and as fairly as journalistically possible can the public confidently make decisions based on the truth of evolving issues of scientific risk.

Recommendations for Journalists

In terms of social responsibility, media help construct norms and ideas in society, thus influencing the social construction of climate change in the U.S. With this in mind, along with SPJ Code of Ethics guidelines, I can offer recommendations for journalists based on this study.

1. **Consider weight-of-evidence as a reporting strategy where appropriate**, especially as a method of underscoring the majority voice of science by deemphasizing what is considered untrue rather than giving it the same merit. This will clarify issues for the audience, who relies on journalists to give them a straight story (Hansen, 1991; Nisbet & Myers, 2007).
2. **Consider the public as citizens.** Journalists should think of the public as citizens as well as consumers to emphasize when citizen action is required. In writing about evolving risk issues like climate change, enabling information should be an important component of the coverage (Dunwoody & Griffin, 1999). These risks herald possible harm to public health, yet the measurement of likelihood of this harm is often fraught with uncertainty. That combination may motivate audience members to learn more. Including details of where a study is published or how to contact an expert would allow individuals to begin the process of taking personal responsibility and action for combating climate change. This may mean when writing about a new automobile, for example, to include information based on fuel economy and carbon footprint, rather than luxury style features. Newspapers

can be utilized in the mobilizing process, yet they are not always involved in local grassroots development. According to social responsibility theory, journalists should explore ways to engage the public and the press in solving problems where appropriate (Commission on Freedom of the Press, 1947). They must also be cognizant of culture differences, especially when reporting on other countries.

3. **Engage readers.** In the last few years, climate change has become noticeable in our daily lives. Evidence indicates that people generally avoid thinking about this dreadful phenomenon until forcefully pressed upon them (Ungar, 1990), but the situation has come to a crucial point. Humans have gone to greater lengths to support the oil-addicted culture in which we live, while experiencing firsthand the effects of climate change, such as more severe storms and melting polar ice. A socio-cultural lifestyle change is required and may in fact be occurring now. According to opinion polls, public awareness about the reality of anthropogenic climate change is greater now than ever since the first mass news media stories on the topic appeared approximately 20 years ago (Nisbet & Myers, 2007). The need to continue to raise public awareness now is greater than ever. Grave consequences lie in wait if humans do nothing. If there is anything that can be done about climate change, it should be done. Climate scientists say that climate change is in part a manmade problem; thus, man should work toward fixing it. Journalists can step into this responsibility role by appealing to audience's sense of citizenship.

Future Studies

The sample of stories used for this study included only the news stories on page 1. Items that appeared elsewhere in the paper, including opinion pieces and ads, could alter the consistency of the results. Editorials can feature a single side of the issue, influencing the readers strongly in one direction or the other. Advertisers can buy ad space and fill it with "advertorials." Livesey (2002) studied Exxon Mobil's paid-for opinion pieces in *The New York Times*, which consisted of "greenwashing" messages that contributed to an atmosphere of confusion around these arguments. In other words, the metastory that appeared in the paper as a whole may differ from the one described here. Thus, the issue deserves further study.

Further, it would be interesting to look at historic periods for newspaper stories around periods of social change, e.g., civil rights in the 1950s and 1960s and the Vietnam War. While Dunwoody's concept of weight-of-evidence reporting is fairly new (2005) in terms of being on journalists' and academicians' radar, it may be relevant to see if journalists have previously used this strategy to move the public toward social change, which may be the precedent for the practice today.

Additionally, in the data sample used in this study, much discussion of Asia's environmental problems indicated a need for a comparative study between cultural newspapers. It would be valuable to see how the countries in question perceive their own problems, as the international perspective of U.S. journalists does not always reflect the opinions of the local Asian governments, citizens, and scientists. This is especially true

with a country as culturally distinct from the U.S. as, for example, China whose media are under complete control of the communist state. Regional differences of the effects of climate change, as well as differing attitudes about the issue, within the U.S. are also played out in the metastory, though on a smaller scale.

The media coverage of a given environmental issue reflects the dominant industries of the area served by a media outlet (Dunwoody & Griffin, 1999). Media organizations are not idiosyncratic features of an urban landscape; they are creations of that landscape, and newspapers in high-pluralism communities sanction coverage of conflict more and reward media organizations for enterprise reporting (Dunwoody & Griffin, 1999). Localized mass media may prefer to avoid reporting on corporate devastation of the environment because of the consequences such coverage may have on local businesses. Additional research into the local influencers on newspapers is needed to identify and expose to the public the abusive powers that exist within the media power structure. Study of local U.S. community papers is therefore worthwhile to see how the regional angle on climate change may influence style of coverage.

Summary

Climate change, a scientific risk controversy was the topic of this study's sample of stories selected from 20 years of articles published in *The New York Times*. Exploring this issue is important because newspapers are a source of information for the public over time (Hansen, 1991; Nisbet & Myers, 2007). Since citizens use news to educate themselves, media have a duty to inform the public accurately.

Narrative analysis of the coverage told a story of the nation's most influential newspaper coverage, replete with protagonists and antagonists, action and setting. The story continues, with another spike in newspaper coverage occurring as this paper is being written, in late 2009, with global climate talks on the horizon for mid-December 2009 in Copenhagen. The topic is as relevant as ever, and the time is ripe for journalists to challenge the public's inclination to look away from problems. Studying *The New York Times* shows this leading publication has given expert status to climate scientists, offering a guidepost for other journalists covering scientific controversy and human risk.

These patterns in coverage of issues surrounding scientific risk controversy meet moral responsibilities of journalists. The newspaper empowers people to evaluate information on human risk accurately by offering weight of evidence on the issue. The weight-of-evidence reporting by *The New York Times* reflects an observable shift in the structure of feeling regarding climate change by journalists over time. Over time, the reporters crafted stories that were more specific about symptoms and disasters caused by climate change. As evidence of climate change piled up, the case for it became stronger, and journalists' obligation to inform the public became more important due to the possible harms of climate change's worst effects. This observation is situated within the paradigm of duty ethics in general and the Society of Professional Journalists (SPJ) Code of Ethics in particular.

Public knowledge on the issue of climate change has evolved during the last two decades (Nisbet & Myers, 2007), and this study has shown how coverage has changed over time as well. In preparing for the future, journalists might consider using weight of

evidence as a reporting strategy, treating the public as concerned citizens who can be engaged to proactively deal with manmade problems.

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