

THE SALIENCE OF MEDIA FRAMES

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Abstract

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This exploratory study takes stories from *The New York Times* and uses the issue of global warming as a case study to analyze whether the frames appearing at the beginning of news stories are different from the frames appearing after the first three paragraphs. The study examines whether the paragraphs discuss several issues, global warming's causes, effects, and possible solutions, and whether to take action against it. In addition, this study looks at where sources of information appear in the text.

To analyze where frames appear in news stories, this study examines each paragraph of the stories for relevant frames. In the end, this study analyzed 42 news stories, which came to 890 paragraphs of news text. This study attempts to see whether the first three paragraphs give an accurate reflection of the whole story. It also tries to get a better sense of where information appears in the story. To do this, this study used both quantitative and qualitative research methods. The quantitative analysis included cross-tabs and a difference in proportion test to see the differences between the first three paragraphs and the balance of the stories were statistically significant. In addition, the qualitative analysis examined single stories in two ways. In one analysis, the research examined whether a single story matched the aggregate analysis of the data. In the other analysis, the research analyzed a story, paragraph by paragraph, to get a better sense of where information appears in news stories.

The aggregate analysis shows small differences between the beginning and the rest of the story. The difference in proportion test reveals these differences are not statistically significant. The analysis of individual stories challenges some of the aggregate findings. One story shows that the prominence of frames in the first three paragraphs does not always match the prominence in the balance of the story. In addition, this analysis points out a concern that even when frames in the opening paragraphs match the balance of the story, the frames may appear well into a story.

By taking into account reading behavior, this study attempts to bridge the gap between content and media effects research. In addition, this study challenges the use of the whole story and supports the use of proxies as an accurate substitute for content analysis research.

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Chapter 1

Introduction

Content analysis has become an increasingly popular research method in the field of communication. In an analysis of articles in *Journalism Quarterly*, Riffe & Freitag (1997) found a steady increase in the number of studies that used content analysis. Their research found that the percentage of studies in *Journalism Quarterly* using content analysis increased from 6 percent in 1971 to 35 percent in 1995 (Riffe & Freitag 1997). This increase in studies using content analysis shows that it has become a popular method in the field of mass communication.

Studying content is crucial because it reflects how media affect peoples' perceptions of reality. Research shows that the issues covered by the media are seen as important by the public (McCombs & Shaw, 1972). In addition, the way the media frame these issues affects where people attribute blame for causes, solutions, and victims of political and social issues (Entman, 1993, 2004).

Currently, studies that analyze news texts use either the whole story or a number of different proxies in place of the whole story. There are several points of contention for each of these criteria. First, analyzing the entire story is expensive and time consuming. Many argue the use of proxies such as news indexes and abstracts solves this problem. Research shows that these proxies offer an accurate reflection of the whole story (Althaus, Edy, Entman, & Phalen, 1996; Althaus, Edy, & Phalen., 2001; Althaus, Edy, & Palen, 2002; Edy, Althaus, & Phalen., 2005), but even these proxies do not address the second dilemma. The second dilemma is that coding the

entire story or using these proxies may include information that is less salient to the audience.

The two main issues that affect the salience of information are the location of information in a story and the behavior of the audience. Research on journalistic norms and rules indicates that journalists rely on the inverted pyramid when writing news stories (Stepp, 2004), which means the most important information appears at the beginning of the story (Felder, Bender, Davenport, & Kostyu, 1997; Itule & Anderson, 1997; Pottker, 2003; Rich, 2000). In addition to placement, the research on reading behavior indicates that few people read the entire paper or read most stories from beginning to end (Bush, 1966; Garcia & Stark, 1991; Outing & Ruel, 2004; Schramm, 1947; Stamm & Jacobovitch, 1980). By combining these areas of research, this study makes an “effort to match content with readership/viewership” behavior (Shoemaker & Reese, 1990, p. 649).

The goal of this study is to analyze whether the beginning of a news story gives an accurate reflection of the whole story. This research may provide another proxy for researchers that will not only save time and money and provide an accurate reflection of the whole story but may be superior to current proxies because it includes the salient portion of the actual text.

To test this proxy, the researcher analyzed stories on the issue of global warming by paragraph to see whether the first three paragraphs give an accurate reflection of the whole story. The study consisted of a quantitative analysis looking for statistical differences between the first three paragraphs and the rest of the story, and a

qualitative analysis that examined single stories to see whether they matched the aggregate quantitative analysis of the data.

Chapter 2

Literature Review

Newspapers

Newspapers remain an important source of information. Even with declining circulation (Project for Excellence in Journalism, 2004) due to television and the internet (Angwin & Hallinan, 2005), 78 percent of adults say they read a newspaper once a week (McCauley & Nesbitt, 2005). The continued popularity of newspapers among the public and their increasing availability through databases like Lexis Nexis make newspapers an important and easy to access source of information for researchers. Studying news content is important because these stories affect the audiences' perceptions of reality. Studies show that news affect what issues the public believes are important (McCombs & Shaw, 1972), and how people structure and understand information (Iyengar, 1990, 1991; Entman, 1993, 2004).

Agenda-setting

Framing and agenda setting have a close relationship in media research. There are two distinct camps within the field: those who argue that framing is a distinct theory, and those who contend that it is an extension of agenda setting. Agenda setting is defined as the media's role in focusing attention to certain issues at a specific moment in time. Over the years, a number of studies have shown a relationship between the agenda of the media and the agenda of the public (McCombs & Reynolds, 2002). For example, McCombs and Shaw's research (1972) reveals a strong

relationship between the agenda of *The Charlotte Observer* and the citizens of Charlotte, North Carolina. They found that the issues seen as important by the public were the issues given extensive coverage by the media. They concluded that the judgment of voters reflects the “composite of the mass media coverage” (McCombs & Shaw, 1972, p. 181; see also McCombs & Shaw, 1977).

Scholars argue that issues in the news have many attributes, and by focusing on different attributes, the media focuses on ‘frame’ the story, affecting how it is understood (McCombs & Ghanem, 2001; McCombs & Reynolds, 2002). For example, the issue of rising gas prices has several attributes, which range from conflicts in the Middle East, the economy, oil companies, and energy use. If a news story focuses on the attribute of oil companies, then the second-level agenda setting research argues that people will see the oil companies as being responsible for high gas prices (McCombs & Reynolds, 2002). The research concludes that second-level agenda setting temporarily makes pieces of information more accessible. Some argue this is simply a priming effect and the theory does not address the issue of attribution and the creation of cognitive maps to understand different political and social issues (Nelson, Clawson, Oxley, 1997; Nelson, Oxley, & Clawson, 1997; Scheufele, 2000).

Contrary to agenda setting, framing is defined as “selecting and highlighting some events or issues and making connections among them so as to promote a particular interpretation, evaluation, and/or solution” to a political or social issue (Entman, 2004, p. 4). The frames in news stories create cognitive windows of understanding, which affect the diagnosis of causes, moral judgments, and possible remedies to social and political issues (Entman, 1993, 2004). Whether it is the

description of the soldiers avoiding duty in the Vietnam War (Tuchman, 1978), or the picture of Saddam Hussein's statue being torn down in the center of Baghdad (Kellner, 2004), frames affect the attribution of blame and the appropriate solutions to various political and social issues.

From a psychological perspective, Scheufele (2000) believes an important factor that distinguishes framing from agenda setting is the weighing of information. An experiment by Nelson, Clawson, et al. (1997) found that after viewing the same information with different frames, two groups showed no difference in the accessibility of key words. The results show no sign of a faster reaction time to words like 'freedom' or 'free speech' among those who saw the information framed as an issue of free speech compared to the other group who saw the same information framed as a civil disturbance. They concluded that if accessibility explains framing, then there should have been a difference in reaction times between the two groups. Moreover, they argue that current research does not address a possible situation where multiple concepts may be equally accessible. They believe it is more important to examine which issues people weight as important rather than accessible (Nelson, Clawson, et al., 1997).

Another factor that separates framing from agenda setting is framing's concern with how media messages create "interpretive schemas that influence the interpretation of incoming information" (Scheufele, 2000, p 309). Not only do frames activate information and emphasize what is important, but frames make connections between pieces of information in people's cognitive networks. Repeated exposure to frames

over time fosters these connections between pieces of information leading to a particular understanding and attribution of blame (Entman, 1993, 2004).

Studies on framing effects theorize that media frames make connections within a person's associative network. In his process model of framing, Scheufele (1999) theorizes that readers build mental frames from the media frames they are exposed to. In order to explain this process, media effects studies borrow heavily from psychology to describe the influence of media in creating cognitive frames.

These psychological theories hypothesize that humans are cognitive misers (Fiske & Taylor, 1984), which means they take shortcuts to save cognitive energy (Fiske & Taylor, 1984; Graber, 1988; Kosicki & McCleod, 1990). These short cuts, or heuristics, lead people to make decisions that are rarely "detailed, exacting, and creative" (Fischhoff, Slovic, & Lichtenstien, 1980, p. 127). Instead, people use closely related pieces of information to inform the decision making process.

In order to save energy, people make connections in their associative network that allow them to take cognitive shortcuts when processing information. This theory puts forward the idea that our memories consist of information nodes that are connected to each other. Such connections between different pieces of information are called cognitive schemas, or frames (Collins & Loftus, 1975; Fiske & Taylor, 1984). For example, the color red is connected to memory nodes such as stop, roses, and fire engines (Collins & Loftus, 1975). Many of these connections are based on an individual's experience.

If people cannot experience things first hand, they rely on the media to provide them with information. This makes media coverage important because the frames in

the media can affect the connections that people make between pieces of information in their associative networks. Iyengar's (1990) research on framing provides some detail on how these connections are made. His research finds that the frame of a story can change the attribution of blame for an issue like poverty. In his research, he uses two frames: thematic frames and episodic frames. Thematic frames are defined as "information bearing on general trends, or matters of public policy," while episodic frames are defined as a "personal experience" in which "the viewer is provided with particular instance of an individual or family" (Iyengar, 1990, p. 22). In his experiment, exposure to thematic frames led people to attribute blame for poverty to the government or the social system. In contrast, exposure to episodic frames led people to blame the individual for being poor (Iyengar, 1990, 1991).

Once these cognitive frames are established, news stories activate pieces of our memory (Collins & Loftus, 1975; Fiske & Taylor, 1984; Graber, 1988). The closely related concepts in the associative network are used to fill in missing pieces of the story. This process allows people to pull information from their memories and make sense of new and complex stories without expending too much cognitive energy. Stories that are too complex, or do not make sense with the previously stored information, become difficult to comprehend (Entman, 2004).

Hence, instead of simply absorbing information, people actively process information by using previous frames and schemas. They pull from their memory by activating interpretive networks, and then integrate the information into their memories by creating new connections, or re-enforce existing relationships between pieces of information (Fiske & Taylor, 1984; Graber, 1988).

Content research

One of the ways media scholars examine the possible effects of media is by analyzing its content. An example of a content study comes from the research on social movements. In two studies looking at the women's rights movement, research indicates that the media frame women's rights groups as disorganized (Ashley & Olson, 1998), and its participants are depicted as "crazy, ill-tempered, ugly, man-hating, family-wrecking, hairy-legged, bra-burning, radical lesbians" (Lind & Salo 2002, p. 218). Even when the media cover a women's rights conference, like the World Conference on Women, the research indicates that the media focus on unrelated issues, such as the diplomatic relationship between the U. S. and China (Phalen & Algan, 2001).

Researchers have two options to study media content. They can analyze the entire news story or use proxies in place of the whole story. Studies that analyze the whole story are time consuming and cost a lot of money. In order to analyze as much content as possible many researchers rely on different proxies in place of the whole story.

Proxies are an acceptable substitute for the whole story because research indicates they do a good job of reflecting the content of stories in their entirety (Althaus, et al., 1996; Althaus, et al., 2001; Althaus, et al., 2002; Edy, et al., 2005). Studies use a variety of different proxies when analyzing news stories. For example, studies have used news indexes (Althaus, et al., 1996; Althaus, et al., 2001; Bennett, 1990; Bennett & Lawrence, 1995), abstracts of television news (Althaus, et al., 2002; Edy, et al., 2005), the headline of a newspaper story, (Bennett & Klocker, 1996;

Hughes; 1995; Johnson & Wanta, 1995), and the first few paragraphs of a news story (Bennett & Lawrence, 1995; Johnson & Wanta, 1995) as surrogate for the whole. One study goes as far as using the first sentence of broadcast news abstracts as a proxy for the whole story (Johnson, 1988).

Though proxies allow researchers to analyze less text and get an accurate portrayal of the story, there is an underlying problem with either analyzing the whole story or using proxies. The problem is that neither a full-text reading nor proxies incorporate findings of readership patterns to analyze precisely the text that most readers consume. Research on reading behavior indicates that most people read only the first few paragraphs of news stories making them more salient to the reader (Bush, 1966; Garcia & Stark, 1991; Outing & Ruel, 2004; Schramm, 1947; Stamm & Jacoubovitch, 1980).

Salience of media messages

Researchers in mass communication, specifically in the area of framing and agenda setting, indicate that certain parts of news stories are more salient to the audience. Salience is “something... that draws attention... to a specific aspect of the event,” or in this study, news story (Higgins, 1996, p. 135). The emphasis here is on “stimulus information” and not “stored knowledge” (Higgins, 1996, p. 135).

Studies indicate that placement of stories in newspapers affects what issues the audience perceives as important. These studies emphasize that placement and order of information make certain messages more or less salient to the audience, depending on where the information is located in the newspaper or the story (Beher & Iyengar, 1985; Entman, 1993; Ghanem, 1997; Kioussis, 2004; Manheim, 1986; McCombs & Shaw,

1972; Phalen & Algan, 2001; Watts, Mazz & Snyder, 1993; Williams, 1985; Winter & Eyal, 1981). Mass communication research on agenda setting shows that the front page of newspapers and the beginning of newscasts have the greatest effect on the audience, compared to stories appearing on the inside cover of newspapers or towards the end of newscasts (Behr & Iyengar, 1985; Ghanem, 1997; Manheim, 1986; Watts, et al., 1993; Williams, 1985; Winter & Eyal, 1981). For example, studies by Behr and Iyengar (1985) and McCombs and Shaw (1972) found that issues appearing on the front page of newspapers are more likely to appear on the public's agenda than issues on the inside pages of newspapers. Framing studies show similar results.

Studies on framing emphasize the importance of order and placement when it comes to analyzing media texts (Entman, 1993, 2004; Phalen & Algan, 2001). Entman (1993) argues, “[T]exts can make bits of information more salient by placement or repetition” (p. 53). A study by Phalen and Algan (2001) mentions that news stories emphasize different issues in the lead and the first half of news stories than in the subsequent paragraphs. These examples emphasize that the order and placement of information is an important issue that affects the reader. These studies also give more reason why it is important to acknowledge both writing style and reading behavior when analyzing media texts.

Order effects and priming

The order of information in a story is important because research shows that the first few paragraphs affect how readers understand the story. Research on the order of questions in questionnaires finds that that preceding questions prime individuals and affect how they answer subsequent questions (Schwarz, 1999; Zaller, 1992). Similarly,

studies find that information appearing early in a news story or newscast primes pieces of an individual's memory, which changes how they process the subsequent information (Price, Tewksbury, & Powers, 1997; Scheufele, 2004). For example, Price et al (1997) find different responses to the same information based on the frame in the opening paragraph of the story. Showing similar results, research by Fruh (as cited in Scheufele, 2004) indicates that information at the beginning of the story affects how readers understand subsequent information, and that people stop processing information as they reach the end of the story. Similarly, research by Staab (as cited in Scheufele, 2004) indicates that the first story in a newscast affects how people process the rest of the program.

The order of information in news stories primes pieces of a person's memory. Priming is defined as "the effect of some preceding stimulus or event on how we react... to some subsequent stimulus" (Roskos-Ewoldsen, Roskos-Ewoldsen, & Dillmar Carpentier, 2002, p. 97). Similarly, Iyengar and Kinder (1987) make the case that priming temporarily changes "the standards that people use to make political evaluations" (p. 63). The result is that the information becomes temporarily more accessible, affecting how subsequent information is processed (Iyengar & Kinder, 1987; Roskos-Ewoldsen, et al., 2002). Instead of people searching through all of their knowledge, they base their judgment on what "happens to come to mind," or what pieces of memory happen to be primed (Iyengar & Kinder, 1987, p. 64). The possible priming effect from the beginning of news stories makes the first few paragraphs even more important than information appearing later in news stories.

Creating frames & writing style

The production of news begins with selecting and deciding which issues make it to the public (Miller & Riechert, 2001). Journalists sift through information and make decisions about what will make into the newspaper or the newscast (Clayman & Reisner, 1998; Shoemaker, 1991; White, 1950). In the decision making process, journalists rely on routines and norms to make such decisions, which affect several aspects of news content (Ryfe, 2006, Tuchman, 1973, 1978).

Routines and rules have a major influence on journalists (Hansen, Ward, Conners, & Neuzil, 1994; Tuchman, 1973). In his work on news rules, Ryfe (2006) defines a journalistic rule as a “normative assumption or expectation about appropriate or legitimate modes of behavior—what a journalists role is, what her or his obligations are, what values and commitments are appropriate—in the context of news production” (p. 205). In addition, routines and rules allow journalists to deal with new events in an orderly way. Tuchman (1973) notes that, “without some routine method of coping with unexpected events, news organizations, as rational enterprises, would flounder and fail” (p. 111). These routines and rules socialize journalists, leading them to make similar decisions about what constitutes news, the appropriate sources of information, and how journalists write the story (Bennett, 1996, Epstein, 1973; Fishman, 1980; Gans, 1979; Ryfe, 2006; Sigal, 1973; Tuchman, 1973).

A good example of standardized news coverage comes from a recent study by Bennett, Lawrence, and Livingston (2006). Bennett and his colleagues found that with little exception the media framed the Abu Ghraib scandal in favor of the Bush administration. This research supports Bennett’s argument that norms and rules create

a lack of diversity in news coverage (Bennett, 1996).

Writing style

Not only do rules and routines create standardized news frames, they also contribute to the number of stories written in inverted pyramid format. Journalism schools across the country teach students the inverted pyramid in their writing curriculum. Research indicates that journalists write 70 percent of their stories in the inverted pyramid format (Stepp, 2004). In the inverted pyramid, the first paragraph contains the most important information and the subsequent paragraphs contain information of decreasing importance (Felder, et al., 1997; Itule & Anderson, 1997; Pottker, 2003; Rich, 2000).

A typical story begins with the summary lead paragraph (Rich, 2000). This paragraph focuses on the who, what, and why of the story; it defines the problem and puts the news in context (Felder, et al., 1997; Itule & Anderson, 1997; Rich, 2000). This paragraph gives the readers the “gist of the story” and allows them to decide whether to continue reading (Itule & Anderson, 1997, p. 489). The next paragraph contains background information focusing on the who and when of the story (Rich, 2000). This is followed by the third paragraph, or “nut graph,” which “states the focus (and)–the main point of the story” (Rich, 2000, p. 34).

Journalists argue that the inverted pyramid gives the most important information to the reader quickly. This allows the editors to cut out the end of the story, which contains the least important information, in order to save space in the paper. Some scholars believe that this leads the audience to read stories from top to bottom with decreasing interest and a tendency to stop before the end of the story (Bogart,

1981; Bush, 1966; Garcia & Stark, 1991; Graber, 1988; McCauley & Nesbitt, 2005; Outing & Ruel, 2004; Rich, 2000; Schramm, 1947; Stamm & Jacobovitch, 1980).

Several studies on reading behavior support this argument.

Reading behavior

There is little research in mass communication on what people actually attend to. Of the research available on reading behavior, most focuses on newspaper design (Bush, 1966; Garcia & Stark, 1991; Outing & Ruel, 2004), or the research is outdated (Schramm, 1947; Stamm & Jacobovitch, 1980). Despite these limitations, the research is conclusive on two points: few people read the entire newspaper, and only a handful of people read stories in their entirety.

There are three dominant methods used to collect readership data. These methods include surveys (Bush, 1966; McCauley & Nesbitt, 2005), reader diaries (Schramm, 1947; Stamm & Jacobovitch, 1980) and eye-tracking technology. Eye tracking records the readers' eye movement to see precisely what they are reading and how much time they spend on each item in the paper (Garcia & Stark, 1991; Outing & Ruel, 2004).

Studies indicate that most readers see about 30 percent of the stories in the news section (Garcia & Stark, 1991), out of which only half are read in-depth. An in-depth reading of a story occurs when the reader gets through at least half the story (Garcia & Stark, 1991). Cumulatively, this means about 15 percent of news stories in a paper are read in-depth. Similarly, Stamm and Jacobovitch (1981) found that the average person reads about 11.6 percent of their daily newspaper and about 11 percent of the news section.

Even when readers attend to a story, they rarely make it to the end. Research examining behavior at the level of a story indicates a quick drop off in the readership after a person begins reading a story. Now dated research by Schramm (1947) found that people attend to 75 percent of a story that is five to eight paragraphs long and only 50 to 55 percent of a story that is nine or ten paragraphs long. Moreover, only about 70 percent of people read up to the third paragraph, and only about 40 percent read to the eighth paragraph of a typical story (Schramm, 1947). Similarly, Stamm and Jacobovitch (1981) determined that people read about 2.8 inches of news per headline, which are about two to three paragraphs per headline.

In an era of information overload and increasing demands on time, it is reasonable to expect readership patterns have not shifted to a more in-depth or comprehensive readings of the news. The research on reading behavior and the structure of news stories generates a strong argument that the beginning of a news story contains the most important information and is the most salient section of the story to readers. In addition to containing the most important information and being salient to the audience, research indicates that the order of information affects how readers process subsequent information in news stories. This adds to the argument that the first few paragraphs are the most important part of a news story (Price, et al., 1997; Schwarz, 1999; Zaller, 1992).

By failing to account for reading behavior, content studies may not get an accurate reflection of what most people are reading. Combining reading behavior and the placement of information, Phalen and Algan (2001) argue, “people often read only the first few paragraphs of stories [which] can have a significant effect on perceptions”

of media messages (p. 305). They also argue that fewer people interact with information appearing towards the end of the story making it less salient to the audience (Phalen & Algan 2001). This means that if frames depicting the women's movement as disorganized and its participants as lazy appear towards the end of the story, they are less likely to be read by a good deal of the audience. In addition, research shows that frames appearing at the beginning of stories affect how the reader understands subsequent information. If this is the case, content analysis studies should focus on the frames most salient to the audience. Emphasizing the salient frame of a news story will allow researchers to make stronger claims about the effects of content on the audience.

The lack of research examining the process of creating and consuming frames has left the field devoid of a desperately needed connection between media content and the behavior of the audience. Both these factors affect the perceived effects of the media. Taking into account the structure of news stories and the behavior of the reader, it does not make sense to give equal weight to all the information in news stories. If researchers do give equal weight to the whole story, they may be giving equal weight to information that most people are not reading. This paper attempts to explore whether the beginning of the story has different information than the rest of the story. This leads to the first research question:

RQ1: Is information found earlier in the story different from information found in the rest of the story?

The differences that may arise from this analysis could reveal some important information. As Phalen and Algan's (2001) study on the media coverage of a women's

rights conference in China found, information appearing at the beginning of the stories focused more on non-conference issues, like the diplomatic relationship between the United States and China, compared to the information appearing later in the story, which focused on the concerns of the women's rights movement. It may also shed some light on the privileged groups (government officials, scientists etc.), and the general masses representing the non-elites who speak in the news stories. This is important because if there are a variety of voices, those who appear at the beginning of the story have a greater chance of being exposed to readers than the sources placed toward the end of the story. This leads to the second research question:

RQ2: If the information between the beginning of the story and balance of the story differs, how is the information different?

In order to test whether there are differences between the beginning of the story and the balance of the story, the researcher chose a case study to analyze this issue. This paper uses the issue of global warming to answer these research questions.

Chapter 3

Global warming: A case study

Global warming was picked for two reasons. First, it is an issue that continues to get extensive coverage in the media, and second, there continues to be a wide range of opinions/debates on the existence, causes, and solutions to global warming. These opinions range from Al Gore, whose movie *An Inconvenient Truth* warns people about the problems of global warming, to Senator James Inhofe (2006), whose speech to the Senate claimed that global warming is the “most media-hyped issue of all times.” For

these reasons, the topic of global warming seems likely to receive enough media coverage and a diversity of opinions to make it a topic worth examining for this study.

Research on media coverage of global warming falls into two categories: The first category looks at the media coverage of the issue and the second one examines the public understanding of global warming.

Media coverage of global warming

Studies that look at media coverage of global warming primarily examine how the media cover and frame the issue. Research indicates that the media give equal coverage to those who believe it is happening and those who believe it is a myth (Antilla, 2005; Bostrom, Morgan, Fischhoff, & Read, 1994; Boykoff & Boykoff, 2004; Zehr, 2000). Boykoff and Boykoff (2004) argue that in order to have a balanced story, a journalist gives equal attention to the two most pertinent causes of global warming: human activity and natural heating. Further, Boykoff and Boykoff (2004) find that 53 percent of the stories fit the journalistic definition of 'balanced.' They argue that the problem with this 'balanced' coverage is that it does not match scientific consensus on global warming. Interestingly, only one third of stories match the scientific research on global warming, which emphasizes human activity as a distinct cause of global warming (Boykoff & Boykoff, 2004).

Their analysis of the media coverage includes the coverage of solutions to global warming (Boykoff & Boykoff, 2004). Almost 80 percent of the articles give a 'balanced' account of the solutions to global warming. In these 'balanced' accounts, journalists give equal coverage to mandatory and urgent actions, as they give to cautious and voluntary actions. Only 10 percent of the articles cover the solution in a

way that reflects the suggestions of the scientific community, which emphasize the need for mandatory and urgent action to solve global warming (Boykoff & Boykoff, 2004).

In another study looking at media coverage of global warming, Antilla (2005) examines the framing of the scientific information on global warming. He (2005) finds four predominant frames for scientific information in the media coverage of global warming. These four frames are valid science, ambiguous causes and effects, uncertain science, and controversial science. While valid science emphasizes the scientific findings and highlights the consensus among scientists, the ambiguous cause and effect frame de-emphasizes the scientific research on global warming. Uncertain science covers the breadth of opinion concerning the urgency of the problem, and finally, controversial science contains information from scientists with ties to the oil industry (Antilla, 2005).

Both of these studies emphasize the importance of journalistic norms in producing stories that need to give an ‘unbiased’ account of global warming (Antilla, 2005; Boykoff & Boykoff, 2004; Zehr, 2000). Zehr (2000) argues that media coverage constructs a boundary between the public and scientists, creating a ‘misinformed identify’ for the public (Zehr, 2000). This leads to the discussion on public perception of global warming.

Public perception of global warming

Studies on the public’s understanding of global warming indicate a lack of understanding among the public about the causes and solutions to global warming (Bostrom, et al., 1994; Stamm, Clark, & Eblacas, 2000). Despite consensus among the

public that global warming is happening, Bostrom et al's. (1994) study found that people confuse global warming with other issues, such as the depletion of the ozone. They also showed that people focus on pollution control, instead of reducing energy use, as a way to solve global warming. Similarly, Stamm and his colleagues (2000) found that people confuse issues like the depletion of the ozone and global warming. They also found that people mistakenly name the use of CFC's and deforestation as the major causes of global warming (Stamm, et al., 2000).

The behavior of the audience may help explain some of this confusion. Stamm et al. (2000) found that individuals who spend more time with the media have a better understanding of the problem (Stamm et al., 2000). This is based on the assumption that individuals who spend more time with the media read more of the stories in the newspaper. If the public read more of the stories, they get more of the information, which may explain why people who spend more time with the media have a better understanding of global warming.

Chapter 4

Method

Due to the exploratory nature of this study, the researcher attempted to triangulate both quantitative and qualitative research methods for a more comprehensive understanding of where information appears in news stories. The quantitative content analysis in this paper employed a deductive strategy, which used theory to create a coding sheet and coding protocol. After the researcher finalized the coding sheet and coding protocol, the researcher tested them for reliability using percent agreement and Scott's Pi (Lombard, Snyder-Duch, & Bracken, 2002). Coding

began after the categories reached reliability, which was followed by a statistical analysis of the data (Krippendorff, 1980; Lombard, et al., 2002; Rife, Lacy, & Fico., 1998; Wimmer & Dominic, 2006).

For the qualitative portion of this study, the research used an ethnographic content analysis to analyze the data. In an ethnographic content analysis, the analysis still includes numbers in the form of percentages, even though the categories are not tested for reliability (Altheide 1987, 1996). In addition to placing information into categories, an ethnographic content analysis deconstructs stories to provide a more in-depth analysis of the data (Altheide 1987, 1996). Analyzing data using both quantitative and qualitative methods accounts for both conceptual development and verifying theoretical relationships.

The researcher designed the coding sheet and protocol to analyze how news stories framed the issue of global warming. The structure of the coding sheet moved from broad to specific. First, the coding sheet determined whether the paragraph discussed global warming. Then it coded for whether the paragraph mentioned the causes, effects, solutions to global warming, and whether to take action against global warming. Finally, the sources of information were coded.

First, the coding sheet was designed to see whether each paragraph discussed global warming. Paragraphs coded as mentioning global warming contained any reference to the issue. Paragraphs coded as not mentioning global warming referred to unrelated information, such as the meeting place of an environmental conference.

After coding for the discussion of global warming in the paragraph, the paragraphs were analyzed on the issues relating to the causes of global warming, who

is responsible to solve global warming, the effects of global warming, and whether action is needed to solve the problem. Paragraphs coded as discussing causes referred to an opinion or research that examined the cause of global warming and placed responsibility on industry, human activity, natural causes, or emissions. Paragraphs coded as industry included references to emission from smoke stacks. Paragraphs coded as human activity referred to daily activities, such as driving a car. Paragraphs coded as natural causes attribute blame for global warming to the Earth's natural heating and cooling cycle. Finally, paragraphs coded as emissions contain references to greenhouse gasses or pollution as the cause of global warming without attributing the origins of the gases. This detailed explanation of causes is similar to how the coding sheet dealt with the solutions and the effects of global warming, thus there is no need to give an in-depth description of these two coding processes. For more information on how the coding sheet dealt with effects and solutions to global warming, please see Appendix A and Appendix B.

Closely related to these categories, is the issue concerning discussion on taking action to solve global warming. These paragraphs contain reference to legislation or policies to reduce carbon dioxide. If the paragraph mentions action, the coding sheet is designed to examine whether legislation has been proposed, rejected, or enacted. Proposed action is anything being discussed, such as a policy or agreement like the Kyoto Protocol. Rejected action refers to rejected policies with no chance of being enacted. Enacted refers to a policies or regulations implemented by a government or company intended to reduce global warming.

Finally, the coding sheet coded for sources of information. A source was not simply a direct quote, but any mention of the origin of information. Sources included US government and non-US government officials, representatives from industry, environmentalists, non-elites, and professionals. A source from the US government includes anyone identified as currently or formally affiliated with the US government. A source from non-US officials is anyone affiliated with any country around the world, not including the United States. An industry source includes the head or spokesperson for a company. An environmentalist is a person who works for an environmental group or whom the story identifies as an environmentalist. Non-elites include people off the street. In many instances, non-elites do not have an official title. Finally, a professional is a lawyer, teacher, professor, or a doctor. For details on the coding sheet, please see Appendix A, and for more details on the coding protocol please see Appendix B.

The articles analyzed for this paper consist of stories from *The New York Times* from February 1, 2001, to February 1, 2002. The researcher chose this paper and time period for specific reasons. First, *The New York Times* was chosen because it is known as the paper of record in the United States, setting the agenda for other news sources (McCombs & Reynolds, 2002). Next, the date range of February 1, 2001, to February 1, 2002, was chosen because of the increase in coverage after President Bush's decision to pull the United States out of the Kyoto protocol, which went against elite consensus around the word. Research shows that elite disagreement on an issue translates into an increase in media coverage (Bennett, 1990; Bennett & Lawrence, 1995).

In order to analyze where frames appear in the stories, this paper used the paragraph as the unit of analysis. Knowing that only 70 percent of readers reach the fifth paragraph (Schramm, 1947) and read about of 2.8 inches of text per headline (Stamm & Jacobovitch, 1981), this study separated the first three paragraphs from the balance of the story. In total, this study analyzed 42 stories containing 890 paragraphs of texts.

To meet the requirements of a quantitative content analysis, the researcher tested the five major categories in the coding sheet for reliability. Studies suggest that researchers should include 10 to 20 percent of their total sample in the reliability test (Krippendorff, 1980; Lombard, Snyder-Duch, & Bracken, 2002; Rife, et al., 1998). Since the estimated number of paragraphs for this study was around one-thousand, the researcher analyzed 100 paragraphs for the reliability test.

In the end, four of the five major categories achieved reliability. The reliable categories included global warming mentioned, causes mentioned, effects mentioned, and action mentioned. Solutions mentioned did not achieve reliability. Studies in content analysis recommend multiple tests for reliability (Lombard, et al., 2002). Following this recommendation, the researcher calculated both Scott's Pi and percent agreement for the reliability test.

The test for reliability showed that the category of mention global warming achieved a Scott's Pi of .7 and 91 percent observed agreement. The second category of causes mentioned achieved a Scott's Pi of .88 and 94 percent observed agreement. The third measurement of effects mentioned achieved a Scott's Pi of .72 and 90 percent observed agreement. Action mentioned approached reliability with a Scott's Pi of .63,

and observed agreement of 83 percent. Although this does not meet the .7 level needed to be reliable, it comes close and may be viewed as reliable, given the limited number of incidents in this category. In addition, previously published studies have reported similar scores of Scott's Pi for exploratory research (Hoffman, 2006). Finally, solution mentioned failed to achieve reliability, with only 60 percent observed agreement. Despite this failure, the findings of this category are reported due to the exploratory nature of this study.

To analyze these data for the quantitative analysis, the researcher used cross-tabs and a difference in proportion test to analyze whether differences between the first three paragraphs and the rest of the story were statistically significant. Cross-tabs provide information on the percent of paragraphs in the major categories. With these percentages, the test of proportion allowed the researcher to "test for statistically significant differences between" the first three paragraphs and the balance of the stories (Answers Research).

For the qualitative portion of this study, the sub-categories of the coding sheet were analyzed using percentages to see whether the frequency changed from the first three paragraphs compared to the balance of the stories. These sub-categories are analyzed qualitatively because most of them did not contain enough units to test for reliability or for the difference in proportion test. Although these sub-categories were not analyzed using descriptive statistics, they are included because they provide more information about whether the prevalence of specific information is different in the first three paragraphs compared to the balance of the stories.

The researcher also analyzed single stories. These individual stories were analyzed two ways. First, the researcher picked two stories and counted the occurrences of the categories to see the extent that these stories matched the aggregate analysis of the data. Second, the researcher chose one story to analyze paragraph by paragraph for a more in-depth analysis of where frames appear in news stories. The researcher chose these stories because they seemed to differ from the majority of stories analyzed for this paper.

Chapter 5

Results

The results section is broken into three sections. The first section includes the quantitative analysis of the five major categories and the test of proportion to determine whether there are statistically significant differences between the first three paragraphs and the balance of the stories. The second section includes the qualitative analysis of the sub-categories. In this section, the analysis consists of percentages for the different categories in the first three paragraphs and the balance of the stories. Finally, the third section includes the two analyses of single stories. One analysis compares the occurrences per category to the aggregate analysis and the second is an in-depth analysis of a single story.

Quantitative analysis: Cross-tabs and test of proportion

This section uses cross-tabs and a test for proportion to see whether there are statistical differences between the first three paragraphs and the balance of the story. Cross-tabs compare the percentage occurrence of a given category within the first three paragraphs of the sample to its percentage occurrence in the remainder of the

paragraphs. The test of proportion takes these different samples and calculates whether the differences are statistically significant.

Analysis of whether a paragraph discusses global warming shows that the paragraphs not mentioning global warming become more prominent after the third paragraph of the stories analyzed. In the first three paragraphs, 13 percent of the 127 paragraphs fail to mention global warming. The number of paragraphs that do not mention global warming nearly doubles in the balance of the stories. After the first three paragraphs, 24 percent of the remaining 747 paragraphs fail to mention global warming. The difference in proportion test found this difference to be statistically significant at the 95 percent confidence level (See Table 1).

An increase in the number of paragraphs that do not mention global warming corresponds to the decrease in the number of paragraphs that mention global warming. Within the first three paragraphs, 88 percent of the 127 paragraphs mention global warming. This number decreases by 12 percent in the balance of the stories. Thus, in the remaining paragraphs, 76 percent mention global warming. The test of proportion shows that this difference is statistically significant at the 95 percent confidence level (See Table 1).

While this seems interesting, these findings make sense because these stories were vetted to include stories that focused on global warming. Given the format of inverted pyramid format, it makes sense that these stories include the focal topic in the opening paragraphs.

Table 1
Mentions (in %) of Global Warming
in First Three Paragraphs and The Rest of the Story

| | 1 st 3 Paragraphs (n=127) | Rest of the story (n=747) |
|----------------|--------------------------------------|---------------------------|
| Not Mentioned* | 13% (n=16) | 24% (n=181) |
| Mentioned* | 88% (n=111) | 76% (n=566) |

*Differences significant at $P < .05$

The next level of analysis examines the five major categories of the coding sheet: causes, solutions, action, and effects of global warming. Of the 111 opening paragraphs that mention global warming, journalists are more likely to write about solutions and actions than to explore either the causes or the effects of global warming. What is more interesting for this study is that this emphasis remains relatively stable from the first three paragraphs to the balance of the stories.

Out of these opening paragraphs that mention global warming, 68 percent mention the solutions to global warming, and 84 percent discuss actions to address the problem. The prevalence of these issues remains consistent in the balance of the stories. Within the remaining paragraphs, 73 percent discuss solutions to global warming, and 84 percent discuss the appropriate action to solve global warming. These results show little difference in the prevalence of these topics in the first three paragraphs and the balance of stories. The test of proportion shows that these slight differences between the first three paragraphs and the balance of the stories are not statistically significant (See Table 2).

The causes and effects of global warming are less prominent in the first three paragraphs and the balance of *The New York Times* coverage of global warming. Only 37 percent of the opening paragraphs mention the causes and 20 percent mention the effects of global warming. This trend is consistent throughout the balance of the

stories. In the remaining paragraphs, 36 percent discuss causes of global warming, and 18 percent mention the effects of global warming. The test of proportion reveals these differences not to be statistically significant (See Table 2).

This section reveals that there is little difference between the first three paragraphs and the balance of the stories even though the analysis shows a statistically significant difference between the first three paragraphs and the balance of the stories for paragraphs mentioning global warming. This difference is correlated to the fact that the researcher analyzed those stories focused on global warming.

The more important results come from the analysis of the causes, effects, solution, and action. The results indicate only slight differences between the first three paragraphs and the balance of the stories. In addition, the slight differences between the first three paragraphs and the balance of the stories are not statistically significant. This shows that the first three paragraphs may give an accurate reflection of the subsequent paragraphs in the story.

Table 2
Mentions (in %) of Global Warming Related Issues in
First Three Paragraphs and the Rest of the Story

| | 1 st three paragraphs (n=111) | Rest of the story (n= 566) |
|-----------|---------------------------------------------|-------------------------------|
| Effects | 23% (n=26) | 18% (n=103) |
| Causes | 40% (n=41) | 36% (n= 206) |
| Solutions | 68% (n=75) | 73% (n=413) |
| Action | 84% (n=88) | 84% (n=476) |

Differences are not statistically significant

Qualitative analysis: Percentages in the sub-categories

This section employs a qualitative analysis of the sub-categories from the four categories analyzed in the previous section of this paper. Qualitative analysis is used because most of the sub-categories did not have enough units to test for reliability or significance. Analyzing the sub-categories qualitatively still provides important information about whether there are differences between the first three paragraphs and the balance of the stories.

The solutions category coded to evaluate whether the solutions rest with the individual, society, industry, special interests groups, or the government. Of these actors, the government was the most prominent group to be named responsible for solving global warming. This remained relatively consistent from the first three paragraphs to the balance of the stories. Fully 89 percent of the first three paragraphs discussing solutions mentioned the government as responsible to solve the problem. Similarly, 91 percent of the remaining paragraphs attributed the solution to the government (Table 3).

Few paragraphs contained any of the remaining sources coded for this study. Only 5 percent of the first three paragraphs discussing solutions mentioned the need for industry to solve global warming. Similarly, 8 percent of the remaining paragraphs referred to the responsibility of industry. Solutions from individuals and special interest groups were even less frequent. The frequency of these categories remains relatively consistent from the first three paragraphs to the balance of the stories (See Table 3).

Table 3
Mentions (in %) of Solution Related Issues in
First Three Paragraphs and the Rest of the Story

| | 1 st three paragraphs (n=75) | Rest of story (n=413) |
|-------------------------|-----------------------------------------|-----------------------|
| Individual | 0% | 2% (n=7) |
| Special Interest Groups | 3% (n=2) | 3% (n=14) |
| Industry | 5% (n=4) | 8% (n=8) |
| Government | 89% (n=67) | 91% (n=376) |

This supports the previous findings that there are no substantial differences between the type of information appearing at the beginning and in the subsequent paragraphs of these stories. From the beginning to the end of these stories, there is a clear emphasis on the government's role to find a solution to global warming.

The analysis of the sub-categories related to the effects of global warming reveals that most of the paragraphs emphasize global warming's effect on weather. Weather is the most dominant category appearing frequently, and with somewhat greater prominence, in the first three paragraphs and the balance of the stories. Fully 73 percent of the first three paragraphs and 57 percent of the remaining paragraphs mention global warming's effect on the weather.

The remaining categories are less prominent and appear with nearly equal frequency in the early and the later paragraphs of the stories. Thus, 19 percent of the first three paragraphs and 22 percent of the remaining paragraphs discuss global warming's effects on the economy. Interestingly, little coverage is given to the effect of global warming on people. Only 4 percent of the first three paragraphs and 8 percent of the remaining paragraphs discuss the effects on people. Although the percent doubles

from the first three to the balance, it remains less prominent compared to the other sub-categories. These results support the initial findings of the previous two sections that there is little difference between the first three paragraphs and the balance of the stories (See Table 4).

Table 4
Mentions (in %) of Effects Related Issues in
First Three Paragraphs and the Rest of the Story

| | 1 st three paragraphs (n=26) | Rest of story (n=103) |
|---------|--------------------------------------------|--------------------------|
| People | 4% (n=1) | 8% (n=8) |
| Economy | 19% (n=5) | 22% (n=23) |
| Weather | 73% (n=19) | 57% (n=59) |

The reported causes of global warming include industry, human activity, emissions, and nature. Similar to the previous results, one category dominates the coverage with little change from the first three paragraphs to the balance of the stories. Results show that most of the news coverage attributes global warming to greenhouse gases. The analysis shows that 88 percent of the first three paragraphs and 92 percent of the balance attribute the causes of global warming to greenhouse gases or emissions.

The remaining categories rarely appear in the stories analyzed for this paper. In addition, the percentages remain stable from the first three paragraphs to the balance of the stories. Of the remaining sub-categories, industry is cited in 7 percent of the first three paragraphs as well as 7 percent of the remaining paragraphs. Similarly, 12 percent of the first three paragraphs and 12 percent of the balance of the stories mention human activities as the cause of global warming. Natural causes shows a 5 percent decrease from the first three paragraphs to the balance of the stories, where 7 percent of the paragraphs mention natural causes in the first three paragraphs and only

2 percent mention natural causes in the balance of the story (See Table 5). These results once again show little change from the first three paragraphs to the balance of the stories.

Table 5
Mentions (in %) of Causes Related Issues in
First Three Paragraphs and the Rest of the Story

| | 1 st three paragraphs (n=41) | Rest of story (n=206) |
|----------------------------|--------------------------------------------|--------------------------|
| Natural | 7% (n=3) | 2% (n=4) |
| Industry | 7% (n=3) | 7% (n=14) |
| Human activity | 12% (n=5) | 12% (n=25) |
| Emissions/greenhouse gases | 88% (n=36) | 92% (n=190) |

Finally, the sub-categories for action, which include opposition to action, enacted action, and proposed action, once again show similar results as the previous sections. One frame dominates the coverage with little change from the first three paragraphs to the balance of the stories. For this category, the stories containing reference to proposed action dominate the coverage in *The New York Times*. In the opening paragraphs, 74 percent of the paragraphs mention proposed actions and 71 percent of the paragraphs in the balance of the stories mention proposed action.

Of the remaining categories, 42 percent of the opening paragraphs discuss opposition to action and 2 percent discuss enacted action. Staying consistent with the results of the previous findings, these percentages remain stable from the first three paragraphs to the balance of the stories. In the balance, 36 percent of the paragraphs mention opposition to action and 5 percent mention enacted action to solve global warming (Table 6).

Table 6
Mentions (in %) of Action Related Issues in
First Three Paragraphs and the Rest of the Story

| | 1 st three paragraphs (n=88) | Rest of story (n=476) |
|----------|--------------------------------------------|--------------------------|
| Enacted | 2% (n=2) | 5% (n=22) |
| Opposed | 42% (n=38) | 36% (n=172) |
| Proposed | 74% (n=65) | 71%(n=341) |

In addition to examining frames, the coding sheet examines sources of information to see if certain sources are more prominent in the early or later paragraphs of these stories. This analysis is important because when sources appear more often in the opening paragraphs they are empowered to define the argument, leaving those cited later to respond to or rebut the previous position. The sub-categories that are coded are for US officials, non-US government officials, members of special interests groups, representatives of industry, professionals, environmentalist, and non-elites.

Of the 111 opening paragraphs that mention global warming, more than 50 percent cite US officials, making US government officials the dominant source for journalists throughout the coverage of global warming. Out of the remaining sub-categories of sources, non-US government sources appear in 25 percent of the first three paragraphs and professionals appear in 21 percent of the first three paragraphs. There is little change in the frequency of these sources when looking at the balance of the stories. In the balance, the number of paragraphs with US government officials drops slightly to 43 percent. Non-US government officials and professionals show only a slight change from the first three paragraphs to the balance of the stories. Non-US

government officials appear in 28 percent of the balance of the story and professionals appear in 17 percent of the remaining paragraphs (See Table 7).

The less prominent sub-categories also support the previous findings of this study. Of these less prominent sub-categories, industry sources appear in 2 percent of the first three paragraphs and 5 percent of the remaining paragraphs. Both special interest groups and environmentalists appear in 1 percent of the opening paragraphs and 4 percent of the balance of the stories. Finally, non-elites appear in 1 percent of the opening paragraphs and 1 percent of the balance of the stories (See Table 7). Once again there are slight differences for several sub-categories in the first three paragraphs compared to the balance of the stories; none of the changes are drastic. Again, this suggests that the first three paragraphs give an accurate portrayal of the whole story.

Table 7
Mentions (in %) of Sources in First Three Paragraphs and the Rest of the Story

| | 1 st three (n=111) | Rest of Story (n=567) |
|--------------------------|-------------------------------|-----------------------|
| Non-elite | 1% (n=1) | 1% (n=7) |
| Environmentalists | 1% (n=1) | 4% (n=22) |
| Special Interests Groups | 1% (n=1) | 4% (n=20) |
| Industry | 2% (n=2) | 5% (n=29) |
| Professionals | 21% (n=23) | 17% (n=95) |
| Non-US Government | 25% (n=28) | 28% (n=156) |
| US Government | 53% (n=59) | 43% (n= 244) |

In addition to sources, the coding sheet also examines the political affiliation of US government officials. The coding sheet examines whether the paragraphs contained Republicans, Democrats, both Democrats and Republicans, or no clear party affiliation, which was coded as unidentified. This analysis once again reveals similar results as the previous sections of this paper. The analysis of party affiliation shows that journalists rely on Republicans for information more often than the Democrats.

Of the opening paragraphs, 9 percent contain both political parties. This drops to 6 percent in the balance of the stories. However, when one political party is mentioned, 80 percent of the opening paragraphs and 70 percent of the remaining paragraphs cite Republicans. The Democrats are cited alone in only 2 percent of the opening paragraphs and 10 percent of the remaining paragraphs. Finally, paragraphs that contain unidentified party affiliation make up 10 percent of the opening paragraphs and 6 percent of the paragraphs in the balance of the stories (See Table 8).

Table 8
Mentions (in %) of US Political Parties in
First Three Paragraphs and the Rest of the Story

| | 1 st three (n=59) | Rest of story (n=244) |
|--------------|------------------------------|-----------------------|
| Democrat | 2% (n=1) | 10% (n=22) |
| Both | 9% (n=5) | 6% (n=15) |
| Unidentified | 10% (n=6) | 6% (n=15) |
| Republicans | 80% (n=47) | 70% (n=165) |

Overall, the aggregate analysis of data shows that most of the coverage remains consistent throughout the first three paragraphs to the balance of the stories. The quantitative analysis shows the only statistically significant difference is the category that analyzes whether the paragraph discusses global warming. The remaining categories, such as discussion of causes, effects, solutions, and action, show some slight differences from the opening paragraphs to the balance of the stories, but none of the differences between the categories is statistically significant.

The following section of this paper provides an in-depth analysis of single stories to see whether they match the aggregate analysis of the data. The section will provide further information to supplement the aggregate analysis and provide added information about where information appears in news stories.

Qualitative analysis: Individual stories

To illustrate trends across the data set, this section closely examines two stories providing more detail to the previous results. First, the first story analyzed is the front page story in the July 23, 2001, issue of *The New York Time* titled, *178 Nations Reach a Climate Accord; US Only Looks On*. In this story, opposition to action appears in seven of thirty-four paragraphs, or 20 percent of the whole. Of these seven, three appear in the first three paragraphs making this frame seem central to the story. For example, in the second paragraph the article mentions Bush's opposition to the treaty:

The agreement, which was announced here today after three days of marathon bargaining, rescued the Kyoto Protocol, the preliminary accord framed in Japan in 1997, that was the first step toward requiring cuts in such gases. That agreement has been repudiated by President Bush, who has called it "fatally flawed," saying it places too much of the cleanup burden on industrial countries and would be too costly to the American economy (Revkin, 2001).

Yet only four of the remaining 31 paragraphs mention opposition to the Kyoto Protocol. Of the remaining paragraphs, most focus on the action to solve global warming. For example, the eighth paragraph gives detail about the proposed protocol:

The Kyoto accord calls for the 38 industrialized countries by 2012 to reduce their combined annual gas emissions to 5.2 percent below levels measured in 1990. It set a different, negotiated target for each, with Japan, for example, accepting a target of cutting gas emissions back to 6 percent below 1990 emissions. Those targets were included in the Kyoto agreement and were untouched by the compromise today. Developing countries do not have to do anything to reduce emissions (Revkin, 2001).

Clearly, this story's initial framing in the opening paragraphs makes it seem that the opposition to the Kyoto protocol will permeate the story. This example differs from the aggregate results, which shows similar prominence of frames from the beginning to the balance of the stories. In this story, opposition appears in 100 percent of the opening paragraphs, but only 13 percent of the balance. Despite this

contradictory example, paragraphs mentioning proposed action are almost equally distributed in terms of percentages between the opening paragraphs and the balance of the story. In the opening paragraphs, proposed action appears in 67 percent of the paragraphs and 87 percent of the remaining paragraphs, which is closer to the aggregate analysis of these data.

It is interesting to note that certain sources are also given the privilege to speak first and set the parameters of arguments on global warming. Within this story, six paragraphs cite US officials, three of which appear in the first three paragraphs of the story. In contrast, non-US sources appear in seventeen paragraphs, two of which appear at the beginning of the story. The non-US sources appear in 66 percent of the first three paragraphs and 55 percent of the remaining paragraphs, similar to the aggregate analysis of these data. In contrast, US officials appear in 100 percent of the first three paragraphs and only 10 percent of the remaining paragraphs, which contradicts the aggregate analysis in the previous section of this paper.

Another example of numbers from specific stories comes from the front-page article in *The New York Times*, on July 15, 2001, titled, *Fuel with a Dark Past has a Bright Future*. This article looks at a small mining town in Gillett, Wyoming, and the role coal plays in providing energy to the United States. On the surface, this is a clear example of a story that matches the aggregate analysis, but a further analysis provides crucial information about where information appears in news stories.

To begin with, one of the first three paragraphs and ten of the final 25 paragraphs mention global warming. This means that paragraphs mentioning global warming make up 33 percent of the first three paragraphs and 40 percent of the

remaining 25 paragraphs. This is consistent with the aggregate analysis of the data. The issue here is where these paragraphs appear. Are the paragraphs evenly distributed or placed towards the end of the story? Analyzing each paragraph and its location in the story provides more information about where information appears in news stories.

Descriptive example

This section provides a descriptive analysis of the story, *Fuel with a Dark Past has a Bright Future*. This section supplements the information provided in the previous sections of this paper.

As the previous analysis indicates, one of the first three paragraphs mentions the issue of global warming, which comes close to matching the percent of occurrences in the rest of the story. In the first three paragraphs, the story focuses on the amount of energy coal provides to the United States. In these opening paragraphs, there is only a brief mention of global warming in the second paragraph. The first three paragraphs of the story state:

Switch on a light somewhere in the country and the odds are one in two that it will be powered not by oil, natural gas, uranium, water, wind or anything else but by coal, that Industrial Revolution-era fuel that seems, at least for now, to have reclaimed a 21st-century future.

Only a year ago, coal was widely considered a fuel of the past, vilified by environmentalists for its links to acid rain and **global warming**. But power disruptions and an administration that has put a greater focus on energy security than environmental protection have given coal a new lease on life.

And now, to great joy in places like Gillette, in Campbell County, which might be called the new capital of coal, utilities have begun to reconsider plans, switching to coal from gas, helping not only the industry but also miners like Colt Johnson, 36 (Jehl, 2001).

The next nine paragraphs of this story do not mention global warming. Though one paragraph mentions the environment, it mainly focuses on an issue unrelated to global warming: drilling for oil in Alaska. The paragraph states:

The political support has been strengthened by the fact that the concerns of environmentalists have been focused less on coalmines than on oil drilling in the Arctic National Wildlife Refuge (Jehl, 2001).

The paragraphs between the second and eleventh paragraph continue to focus on coal as a solution to the energy crisis in the United States. These two paragraphs are good examples of what appears from the second to eleventh paragraph of the story:

Coal's brighter future is a product in large part of a task force headed by Vice President Dick Cheney, a Wyoming native, which ruled out proposals that might have relegated coal to secondary status and issued a report with no plans to wean the country from the fossil fuel.

"If rising U.S. electricity demand is to be met, then coal must play a significant role," the task force said in its report last month, projecting that coal would continue to account for about 50 percent of electricity generation for at least the next 20 years (Jehl, 2001).

When the story gets back to global warming, it does so in the eleventh paragraph of the story. Paragraphs eleven and twelve exemplify the focus of these paragraphs:

Because the burning of coal is a major contributor to **global warming**, scientists say, responsible for about one-third of American emissions of heat-trapping gases, the industry's future may still be fragile.

For now, the Bush administration has rejected imposing strict controls on the emissions of carbon dioxide, a major byproduct of burning coal and major contributor to **global warming**. But some top officials in the industry say the question concerning such controls is not if, but when (Jehl, 2001).

From paragraphs 11 to 23, eight discuss the environmental costs of burning coal. This analysis reveals that even though there is equal percentage distribution between the

first three paragraphs and the balance of the story, the paragraphs that discuss global warming in this story appear late in the text.

This article exposes one of the problems with content analysis and the prominence of news frames. Even though the paragraphs are equally distributed throughout the story, this analysis reveals these paragraphs appear well into the story. Since almost 40 percent of the paragraphs discuss global warming, it would probably be included in a content analysis of this issue. The resulting data do not tell us where these paragraphs appear in the story. As this study points out, researchers should be aware of where information appears in the text because the research on reading behavior indicates that not many people get to the eleventh paragraph of most stories.

Chapter 6

Discussion

These results address some important issues related to content analysis and framing research. This section addresses the two research questions proposed earlier in this paper. In addition, this section also summarizes the findings from the quantitative and qualitative analysis of these stories. Finally, this section concludes with a brief summary of the possible implications for the field of mass communication.

The first research question enquired whether information found earlier in a story differs from information found in the rest of the story. The quantitative analysis reveals little difference in the prominence of frames between the first three paragraphs and the balance of the stories. The differences observed in categories such as causes, solution, effects, and action are not statistically significant. Qualitative analysis conducted at the sub-category level seems generally to support the quantitative

findings. Some small differences exist among the sub-categories, but, without a statistical test, there is no way to tell whether these differences are significant. Despite this shortcoming, it is important to keep in mind that this is an exploratory study, and the observed differences come from a random sample. Looking at the results from the five major categories, at this stage of this research it is reasonable to argue that even with a greater number of units analyzed, the differences among the sub-categories might not be statistically significant. More research, which includes a statistical analysis of these sub-categories is needed before drawing any generalized conclusions.

Given the relative stability of frames throughout the stories, there is not much data to answer the second research question about the nature of the differences between the two sections of the stories analyzed for this paper. The most interesting differences appear in the sources of information used in the two sections of the stories. The results show that some sources lose prominence, while other actors may gain prominence in the subsequent paragraphs.

The answer from the first research question challenges the predominant use of the whole story and gives more support to the use of proxies as an accurate substitute for the whole (Althaus, et al., 1996; Althaus, et al., 2001; Althaus, et al., 2002; Edy, et al., 2005). The results of this study indicate that the first three paragraphs may be a suitable substitute for the whole story, meaning content analysis of the whole story may be unnecessary. Instead of analyzing the whole story, a study looking at broad information could focus on the first three paragraphs and get not only an accurate reflection of how many stories contain these frames but also a general sense of the issues' prominence in the rest of the story. In addition, what separates use of the first

three paragraphs from other proxies is that it analyzes the portion of the actual text that is most likely to be read. By analyzing this portion of the text, this proxy takes into account “the behaviors that accompany viewing,” or in this case reading media messages (McLeod & McDonald, 1985, p. 27).

Despite there being few differences between the opening paragraphs and the balance of the stories, the results still show that certain groups are given a distinct advantage to set the agenda and shape the debate on global warming. In this study, elites are a major source of information throughout the stories. This supports other research, which shows that journalists rely heavily on elites as sources of information (Alexseeve & Bennett, 1995; Lasorsa & Reese, 1990; Sigal, 1973). This analysis also provides information that the political party aligned with the president has a distinct advantage over the political party not in the White House. For example, Republicans are given more of an opportunity to speak through the coverage of global warming compared to the Democrats. There are slight differences in sources between the first three paragraphs and the balance of the stories, which indicates that other groups are given more of an opportunity to speak. For now, these are tentative results because the small number of units in these sub-categories prevented a statistical analysis of these categories.

The analysis of single stories shows differences not detected in the aggregate analysis of the data. Combined with the research on reading behavior these analyses reveal some problems that researchers should be aware of when analyzing media content. First, the analysis of the story, *178 Nations Reach a Climate Accord; US Only*

Looks On, provides an example of a story where the first three paragraphs differ from the balance of the story.

Similarly, the in-depth analysis of the story, *Fuel with a Dark Past has a Bright Future*, raises more questions about where information appears in the story. The analysis shows a similar percentage of paragraphs discussing global warming in the first three paragraphs and the balance of the story, which is consistent with aggregate analysis. The issue that raises questions is how far into the story the information appears.

The analysis of *178 Nations Reach a Climate Accord; US Only Looks On* shows some similarities in percentages between the opening paragraphs and the balance of the story, but there is a drastic difference between the percent of paragraphs that discuss opposition to Kyoto in the first three paragraphs and the balance of the story. Fully, 100 percent of the first three paragraphs discuss opposition to the treaty, while only 10 percent of the remaining paragraphs mention opposition. If a researcher codes the first few paragraphs of this story, he/she is likely to have a skewed sense of what the article focuses on. The analysis of the text shows that the first three paragraphs focus on opposition to the Kyoto Protocol, but the remaining paragraphs barely mention the issue.

In the analysis of *Fuel with a Dark Past has a Bright Future*, 33 percent of the first three paragraphs and 40 percent of the remaining paragraphs mention global warming. Nonetheless, this story raises the issue of the location and prominence of this information. The in-depth analysis reveals that after being mentioned in the second paragraph, global warming does not appear again until the eleventh paragraph of the

story. Currently, there is no reason to be overly concerned about how far information appears into the story, but it is an important issue to consider when analyzing content.

These results indicate that if a study is designed to locate the general idea of the predominant frames in news stories, an analysis of the first three paragraphs may give an accurate reflection of their prominence throughout the whole story. In contrast, if a study looks for more descriptive or specific information, the first three paragraphs may not be as useful. The descriptive analysis of the stories *Fuel with a Dark Pas has a Bright Future and 178 Nations Reach a Climate Accord; US Only Looks On*, indicate that pieces of information may appear well into the story. In other words, the first three paragraphs may not give an accurate reflection of the whole story. Although this is important, further research on reading behavior and the placement of content in news stories is necessary before making any conclusions about the impact of this research on content analysis.

These are only preliminary results of an exploratory study. Future research must address the weaknesses of this paper. The following section will address some of these weaknesses and propose future studies for the field of communication.

Chapter 7

Weaknesses and future studies

As with any study, there are weaknesses that need to be addressed here. This is especially true for an exploratory study. This section discusses the weaknesses of the study and some possible solutions to the perceived problems. It also proposes some future studies based on this research.

The most significant issue is related to the unit of analysis. It is important to make a decision whether to analyze stories using the paragraph as the unit of analysis, or move to a larger unit like pieces of news stories. Using paragraphs created several problems, from achieving reliability, to running a statistical analysis on the data.

Weaknesses

First, using the paragraph as a unit of analysis creates an unnatural reading of the story. Journalists write stories with the assumption that people will read from top to bottom, taking information from previous paragraphs with them. This allows them to use sub-textual cues to link subsequent information to previous information. Coding by paragraph made it difficult to reach a balance between treating each paragraph as an individual unit and including sub-textual cues to previous paragraphs. This makes the coding protocol important. The problem remains that using paragraphs makes it difficult to create definitions addressing the use of sub-textual cues in the story. Definitions emphasized the need for direct references to previous information, but these references were not always present in the paragraph. This is not a problem in content analyses coding the whole story or proxies that avoid the issue of sub-textual cues. This problem could have been surmounted, but the time constraints for this project did not allow enough time to continue refining definitions to achieve strong reliability scores.

In addition, using the paragraph as a unit of analysis reduced the number of stories analyzed for this paper. The forty-two stories analyzed for this study is fewer than a typical content analysis. Although this analysis contained a larger sample size in terms of paragraphs, an analysis of forty-two stories does not contain the same breadth

of information and opinions as an analysis of 150 to 200 or more stories. Without this breadth of opinions and information, it was difficult to fill sub-categories with enough units to test for reliability or run a statistical analysis of the differences between the first three paragraphs and the balance of the stories.

In addition, this analysis did not link coded data to the story unit to analyze whether the body of coverage or a few stories were responsible for the units in a category. In the end, the reported percentages provide a wealth of information, but the exploratory nature of this study suggests a more sophisticated analysis of a larger body of coverage is needed to supplement these results.

To alleviate some of these problems, it might be useful to break stories into pieces. This can be done by creating two units of analysis, the first three paragraphs and the balance of the story. Each piece of the story can be treated as a unit of analysis. Hence, the larger units of analysis would enable coding of a larger number of stories, and this will also enable the researcher to address the problem of sub-textual cues.

For future studies that analyze stories using the paragraph as the unit of analysis, a possible solution is to use a computer program to analyze the data. This will reduce the time spent coding an estimated 3000-4000 paragraphs, and solve the problem of achieving reliability. The problem is that using computer software reduces the validity of the results. Once these issues are addressed, there can be a number of possible studies based on this research.

Future research

This research has created an opportunity for a number of future studies in the field of communication. First, this case study can be replicated using controversial or

debatable issues. For example, it may be interesting to analyze a contentious issue, like gun control, containing two strong, dichotomous frames. Researchers can also analyze developing, event driven news (Lawrence, 2001). One of the issues that has not been dealt with in the analysis is the use of ambiguous language by journalists (see Markham, 1996). In the articles in this study, journalists relied on ambiguous language to describe the causes of global warming. Most of the paragraphs attributed the cause of global warming to emissions or greenhouse gasses without an explanation of where the gasses come from. Determining whether journalists use ambiguous language early or later in the story may increase understanding of the usefulness of the first three paragraphs as a content surrogate for the whole story.

Research should also attempt to see whether stories contain multiple frames. The tentative findings of this study indicate that most stories contain one strong frame that permeates the whole story. Establishing whether stories contain multiple frames will re-enforce the need for studies looking at frame placement within the story. If most stories only contain one frame, looking for where information appears is pointless because the journalists will start framing the issue in the opening paragraphs, which is likely to permeate the rest of the story. If research shows that most stories contain multiple frames, then more studies will need to examine whether the beginning of stories primes readers (Scheufele, 2004), or if exposure to conflicting frames reduces the framing effect (Druckman, 2004).

Finally, once it is determined whether different information appears in the first three paragraphs of news stories, researchers should explore the possible relationship between information appearing in these paragraphs and public opinion on these issues.

This will enable the researcher to discover if opening paragraphs have a greater effect on public opinion than the rest of the story.

Chapter 9

Conclusion

The aggregate analysis of the data shows that in most cases one frame dominates the whole story. Though there are some categories in which slight shifts in frames appear between the first three paragraphs and the balance of the stories, more data need to be analyzed to determine whether these differences are statistically significant.

The results of this study are important for several reasons. First, this study concludes that the first three paragraphs give an accurate portrayal of the prominent frames in the whole story. Based on these findings, this study suggests that coding the whole story is unnecessary, and it supports prior findings that proxies are an acceptable and more efficient than coding the whole story (Althaus, et al., 1996; Althaus, et al., 2001; Althaus, et al., 2002; Edy, et al., 2005). Using proxies such as this one allows researcher to save both time and money, and it allows them to code more articles and look at more issues.

What separates this proxy from abstracts or indexes is that coding the first three paragraphs of stories reflects typical reading behavior, and it allows researchers to exclude less prominent information that appears later in news stories. By taking into account the behavior of the audience, this method responds to the concerns voiced by some scholars who note the disconnect between media content studies and the behavior of the audience.(Riffe & Freitag, 1997; Shoemaker & Reese, 1990). In order to bridge

this gap, researchers need to conduct more studies, similar to one by Austin and her colleagues (Austin, Pinkleton, Hust, & Coral-Reaume Miller, in press), which account for the behavior of the audience. In their study, Austin et al. (in press) used trained and untrained coders and observed that they had different interpretations of media content.

Studies like the one reported here raise an important question and challenge the prevalent use of the whole story when studying content. Researchers need to ask whether they are examining content in a way that reflects the audience's reading, scholars' own reading, or academic theories. If the goal is to better understand what information people receive from media, researchers need to be aware of audience behavior when analyzing the content. In addition, they should also integrate results across research methods. For example, content studies should inform their methods and interpretations with the results from media effects and survey research. Integrating across methods will allow content studies to collect data that more accurately reflect the audience's actual exposure to and perceptions of the message.

This study raises another significant issue that researchers should address. The analysis shows that individual stories may differ from the aggregate quantitative analysis. The qualitative analysis highlights two noteworthy possibilities for researchers. Firstly, the initial framing presented in the opening paragraphs of a story may not permeate the whole and, therefore, may not be as significant to people who read the entire story. Secondly, the initial framing may re-appear well past the opening three paragraphs, which again may de-emphasize the issues raised early in the story. These alternatives re-enforce the need to account for reading behavior when doing a content analysis.

Overall, this exploratory study suggests that content analysis of the opening paragraphs of a story may be a promising alternative to existing practices. However, issues such as validity, reliability and sufficient data to generate statistically significant findings need to be addressed. Computerized content analysis of a larger pool of data is one possible means of addressing this need. Such research could make a potentially significant contribution to mass communication and content analysis research, which is why future research exploring this issue would be worthwhile.



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Appendix A

Cover sheet

Article # _____

Paragraph # _____ Of # _____

Date of article: _____

Page #: _____

Number of Words:

1. 250 – 500 2. 501 – 750 3. 750 – 1000

4. 1000 +

Title/
Headline: _____

Coding sheet

1. Does paragraph mention Global warming or issues related to GW? 1. yes 0. No

2. Does paragraph discuss causes of global warming? 1. Yes 0. No

2a. Caused by:

Industry_____ human activity_____ natural problem_____

Emissions/gases_____ other factors _____

3. Solutions discussed? 1. yes 0. no

3a. The solution rests with?

Individuals/society_____ Industry/economic_____

special interest groups_____ government_____ Other_____

4. Effects discussed? 1. yes 0. no

4a. The problem of global warming will affect?

Economy_____ People_____

Weather_____ Other_____

4b. In what way will it affect these categories? Positive(1) Negative(0)

4c. Effects are 1. Significant 2. Insignificant 3. Both 4. Unidentified

5. Action is mentioned? 1. Yes 2. No

5a. Action to solve global warming is:

Rejected_____ Enacted_____ Proposed_____

5b. Action is rejected, enacted or proposed by:

Governments_____ Industry_____ Scientists_____

Special interest groups_____ Other_____

6. Source of information

US government official/group_____ Non US Government official/group_____

Environmentalists_____ Industry_____ Special interest group_____

Professional_____ *Non-elite*_____ Other _____

6a. If US government official or group, is comes from: Republican _____

Democrat_____ Both_____ Unidentified_____

Appendix B

Coding sheet protocol

Article number: Enter the article ID number for each individual article.

Paragraph #: For each paragraph, enter the order of appearance. The first paragraph would be 1 the second 2, etc. The number of appearance should be out of the total number of paragraphs. For Example, the second paragraph of a six paragraph story would look like this: Paragraph 2 out of 6.

Date of article: Record the date the article as it appears in the newspaper.

Number of words: Code the article into the appropriate category based on the number of words provided by Lexis Nexis. Discard stories under 250 words.

Title/Headline: Write the Title for the news story and any addition headline that appears with the title.

1. Does paragraph mention gw or issues related to Gw?

- To answer yes the paragraph must focus on GW: Causes, solutions, effects, implications, of gw. This would include any proposed solutions by government, special interests, environmental groups, or industry. Any effects, solutions, or problems may have been mentioned in previous paragraphs, this would be identified with words like 'the statement,' 'the proposal, These must be from the story not broad like 'a statement' or 'a proposal' that are not specific to the story.

-To answer no, the paragraph must not discuss or be related to the issue of global warming. This would include where people are meeting, or just focusing on characteristics of the source.

2. Causes mentioned?

- to answer yes to causes, the paragraph must include clear statement refereeing to causality, opinion, guessing, and claims of fact about the causes of global warming.

- to answer no, there is no mention of causes in the paragraph. The paragraph may focus on other issues like solutions or effects but there is no reference to causes.

Options:

a. Industry: The paragraph must indicate that some form of industrial activity is at least partially responsible for the warming of the atmosphere. This should include any broad condemnation of a whole industry like the auto industry, coal industry, or oil industry. Also, any reference to a specific company should also be placed into this category. Use the previous definition for business previous established in this coding protocol.

b. Human activity: This is defined as the any regular day to day activity of humans that cause global warming. This would include the use of automobiles, food production, and energy use. The paragraph must directly implicate the behavior of humans as being at least partially responsible for the rising temperatures.

c. Natural problems: The paragraph will attribute the rise in temperatures to the natural cycle of the planet. This argument may reject any claim that human activity or industry are causing global warming. Also, the paragraph may not be completely explicit. Example: Global climate change. Global climate change has been used by those who do not believe human activity is the cause of global warming. Caution: there must not be a previous reference in the story to causes that would have already make this connection.

d. Emissions: Paragraph must refer to emissions in the paragraph. Paragraph may simply refer to emissions in a broad sense, if the paragraph simply states emissions as the cause to gw code paragraph as emissions. If story inc. emissions and human activity code for both.

e. Other: anything that does not clearly fit into any of these categories should be recorded as other and identified by the coder.

3 solutions mentioned?

- to answer yes to solutions the paragraph must include clear statement refereeing to possible solutions, opinion about solutions, guessing, and claims of fact about the right solutions of global warming.

- to answer no, there is no mention of solutions in the paragraph. The paragraph may focus on other issues like causes or effects but there is no reference to causes.

3. The solution to the problem rest with....

a. Individual: The paragraph will implicate that individual behavior or ideas originating from the individual can help fix the problem of global warming. For example, things like reducing energy use in the home, driving less, buying more fuel efficient vehicles or appliance, recycling etc. The information will focus on the past, current, or future behavior of the individual and how it can change help prevent, stop, or reverse global warming.

b. Industry/economic: First, use the previous definition established for industry. The paragraph should describe what industrial has done, is doing, or needs to do to fix the problem of global warming. For example, the auto industry producing more fuel efficient cars or reducing emissions, creativity of industry to move us away from fossil fuels, reduce green house gases from coal burning plants. The paragraph should directly or partially indicate that changing the behavior of companies will help to fix the problem of global warming. Economic or technological solutions should be put into this category when it is spurred by industry.

c. Special interests groups: Use previous definition for special interest group (NGO's included). If the paragraph discusses how NGO/special are responsible for the current or future solution to the issue of global warming. This can include any behavior of the NGO or ideas originating from the NGO's that are suppose to help solve the global warming problem.

d. Government: For this category the government refers to any US (national, state, local) or foreign government. If the paragraph refers to any past, current, or future, research, legislation, etc. that the government has been involved in that is focusing on preventing or reversing global warming. A government solution would include, but is not limited to, proposed legislation, funding, or research.

e. Society: For this category, society is defined as everyone in all the categories listed in this section. Society would include individuals, the government, special interest groups, and industry. All people and groups in society are seen as responsible for finding a solution to global warming.

f. Other: If solution does not fit into any of these categories place into other category and record what the solution by writing it down.

4. - to answer yes to effects, the paragraph must include clear statement refereeing to who, or what is affected by rising temperatures. This would include the effects of rising temps, rising sea levels. These would include heal issues, submerging land masses, and rising temperatures.

- to answer no, there is no mention of effects in the paragraph. The paragraph may focus on other issues like solutions or causes but there is no reference to effects.

4a. The problem of global warming will effect.....

a. Economy: Any effect on the economy originating from the problem of global warming which may include, but is not limited to, an effect on jobs, production, stock markets, etc. Note: discussion of solutions to the problem affecting the economy should be placed in this category because the problem is still affecting the economy.

b. People: This would include issues of health like disease, death from heat, famine from food shortage. This would include any way that people or society is affected by global warming.

d. Weather: For this category any reference to global warming affecting weather should be placed into this category. This would include increase in temperatures, the number of hurricanes, floods, rising sea level or droughts. The information must refer to the effect warming will have on weather not on human health or the survival of the planet.

4b. effect positive or negative

1. POSITIVE: The paragraph must DIRECTLY TALK ABOUT THE EFFECTS OF GLOBAL WARMING HAVING A POSITIVE EFFECT. This must be in paragraph, do not infer from previous paragraphs. For example, developing new technologies will spur economic development.

2. Negative: The paragraph MUST DIRECTLY REFER TO NEGATIVE ASPECTS OF GLOBAL WARMING. This must be present in the paragraph do not infer from previous paragraphs.

4c. effects are: significant, insignificant, not mentioned.

- a. Significant: the paragraph will refer to ‘catastrophic’ effects from global warming. This would include serious health problems, submerging islands, or cities, effects that are imminent, or serious spikes in temperature. MUST BE IN PARAGRAPH DO NOT INFER FROM PREVIOUS PARAGRAPHS.
- b. Insignificant: Paragraph will directly refer to effects as insignificant. This would include words saying ‘not to worry about gw’ or the effects are in the future.
- c. Both If it’s identified as both significant and insignificant then code for both.
- d. Unidentified: If it not identified as either significant or insignificant then code as unidentified.

5. Action of global warming is: proposed, enacted, rejected.

a. Proposed: Proposed government action has been brought up and discussed but has yet to be enacted or rejected by the government agency responsible for the decision.

b. Enacted: government action that has been enacted has been voted or agreed upon to become enforceable by the government. When enacted individuals or industry must follow the new rule or suffer consequences from the government.

c. Rejected: This means the government action was discussed and the parties involved rejected it, which means it will not be enacted.

5a. Industry: First, use the previous definition established for industry. The paragraph should describe what industry has done, is doing, or needs to do to fix the problem of global warming. For example, the auto industry producing more fuel efficient cars or reducing emissions, creativity of industry to move us away from fossil fuels, reduce green house gases from coal burning plants. The paragraph should directly or partially indicate that changing the behavior of companies will help to fix the problem of global warming. This would include technological advances by industry in terms of efficient energy use or reducing emissions through technology.

c. Special interests groups: Use previous definition for special interest group (NGO’s included). If the paragraph discusses how NGO/special are responsible for the current or future solution to the issue of global warming. This can include any behavior of the

NGO or ideas originating from the NGO's that are suppose to help solve the global warming problem. Include anyone representing a groups, environmental, industry, or society.

d. Government: For this category the government refers to any US (national, state, local) or foreign government. If the paragraph refers to any past, current, or future research, legislation, etc. that the government has been involved in that focuses on preventing or reversing global warming. A government solution would include, but is not limited to, proposed legislation, funding, or research.

e. Scientists: This would include academics or the broad use of the terms scientists.

6. Sources of information:

a. Academic: Individuals affiliated with a college or university.

b. Member of administration: This includes anyone appointed by the President of the United States. This would include the head of the EPA, health and human services, etc.

c. Current or former US Government official: This includes anyone who is currently part of the government or someone who is identified as a former US member of government. This includes anyone not appointed by or part of the Presidents administration. This would include any current or former members of national, state, and local governments. If it is a former government official they must be identified this way and not identified as a member of a new group like an NGO. Include president and members of his administration.

d. Non-US Government official: Any government official or government organization identified as being affiliated with a country outside the US.

e. Environmentalist: An environmentalist is a person or a *group identified in the text as focusing on the protection of the environment*. The article can explicitly label the group environmentalists or state that the groups main concern is the environment. This would include groups like the Sierra Club or the National Audubon Society. The article should identify them as an environmental group, if not they should be placed in the special interests group category.

f. Industry: Industry would include an individual or group affiliated with a company or business. This includes any company not just auto or gas companies, so banks, food companies, etc.

g. Special interest group: Any group or member of a group *that is not clearly identified as representing the environment or part of the government is to be placed in this category*. This includes all NGO's and think tanks. Even if the article mentions where the group gets their funding, if they are not identified as being part of that group they should be considered a special interest group/ngo.

h. Professional: When information is clearly identified as originating from a journalist, lawyers, and academics then it is to be placed in this category. If it refers to news stories, academics journals, or law review place into this category.

i. non-elite: a non-elite is defined as a person who is not identified as being part of any of the previous groups and is not identified as having a privileged positions. This would include blue and white collar workers with little power in the organization. For example, a CEO or upper manager in the company would be considered an elite source, other workers in the company should be considered non-elites. They may be identified as workers, or employees.

j. Other: If the claim of fact comes from a person who does not fit into any of these categories put into the other category.

6a. If US government comes from democrat, republican, both, undefined.

- a. Republican identified as Republican. In addition, include president, president staff, and member of his cabinet in this category.
- b. Democrat is a person identified as part of the Democratic party. For both a and b if info comes from a well know Democrat or Republican code even though it may not be in paragraph. For example, Bill Clinton may not be identified as a Democrat, but should be coded as one. This would include former members of Clinton administration.
- c. Both: If both are sources place in this paragraph.
- d. Unidentified: if it refers to government official but isn't from presidential staff, or cabinet, or isn't clearly identified as either, then place into this group.