The Framing of Climate Change in Canadian, American, and International Newspapers: A Media Propaganda Model Analysis[1]

Jennifer Ellen Good
Brock University

Abstract: As a news story topic, climate change has potential narrative elements that include the oil industry and the earth's climatic balance. With the world's leading scientists now insisting that the story should be shifting from *whether* climate change is happening to "What are we going to do about it?" this article offers a critical comparative analysis of how American, Canadian, and international newspapers are framing this key issue. Based on Herman and Chomsky's (1988) media propaganda model, the findings indicate that while newspapers in the United States might be avoiding the issue, all three "regions" show a hesitancy to frame climate change with either extreme weather consequences or oil reduction solutions.

Keywords: Mass communication; Newspaper framing; Climate change; Global warming; Propaganda analysis

Résumé : Comme sujet d'actualité, le changement climatique a des éléments narratifs attirants, y compris l'industrie pétrolière et l'équilibre climatique de la planète. Maintenant que les savants chefs de file du monde entier, au lieu de se demander si le changement climatique existe vraiment, insistent plutôt qu'il faut mettre l'accent sur ce qu'on va faire à son sujet, cet article offre une analyse comparative critique de la manière dont les quotidiens américains, canadiens et internationaux traitent de ce sujet vital. Cette analyse, qui se fonde sur le modèle de propagande de Herman et Chomsky (1988), indique que les journaux américains évitent de traiter de la question et que les trois « régions » susmentionnées hésitent encore à associer des conséquences extrêmes au changement climatique ou à recommander une réduction dans la consommation du pétrole.

Mots clés : Communication de masse; Cadres journalistiques; Changement climatique; Réchauffement planétaire; Analyse de propagande

Jennifer Ellen Good is Assistant Professor in Communication, Popular Culture, and Film at Brock University, 342 SBH, St. Catharines, ON L2S 3A1. Email: jgood@brocku.ca.

***Canadian Journal of Communication,* Vol 33 (2008) 233-255**

The changing frames of climate change?

Climate change is the quintessential environmental story of our time, with potential narrative elements including big business, global economies, cutting-edge science, devastating extreme weather, and perhaps the future of civilization itself. As Gelbspan offered, "Ultimately, the urgency and magnitude of this issue should keep this story at the top of news budgets. It pits the future of our highly complex and vulnerable civilization against the profit and survival of an [oil] industry that generates more than one trillion dollars a year in commerce worldwide" (2005, p. 79).

The goal of this article is to use a framing analysis to explore the story of climate change at a moment in history when, arguably, the story should be shifting from "Is climate change happening?" to "What should we do about it?" The analysis is focused on three geographically based newspaper databases (the United States, Canada, and international) and four frame categories (social context, causes, consequences, and solutions). The foundations of the article rest on Herman and Chomsky's (1988) media propaganda model, which suggests that the mass media always serve the economic, social, and political interests of the elite. If it is true that climate change is a story with implications for the health, if not the survival, of our civilization, then a critical analysis of the details of how we are telling that story, and whose interests are being served in that telling, is very important indeed.

Propaganda and the framing of climate issues

According to McChesney (1998), neo-liberalism is the "defining political economic paradigm of our time" (p. 7) and is characterized by the liberalization of trade and finance, markets that set prices, an end to inflation, and privatization marked by as little government involvement as possible (see also Chomsky, 1999). Herman & Chomsky (1988) have proposed that the media's purpose is to serve the needs and interests of the elite who largely benefit from the kinds of policies that comprise neo-liberal economics. How are the media able to fulfill this purpose? Framing the news plays a key role. Gitlin offers that "Media frames are persistent patterns of cognition, interpretation, and presentation, of selection, emphasis, and exclusion, by which symbol-handlers routinely organize discourse, whether verbal or visual" (1980, p. 7). He goes on to highlight that the news media allow for those in power to exert their will by defining, or largely defining, society's "ideological space" (Gitlin, 1980, p. 10).

The premise of this paper, therefore, is that the changing climate[2] presents a particularly interesting object of analysis for Herman & Chomsky's (1988) media propaganda model; there is arguably no other issue that is on the one hand so fundamentally challenging to the interests of the global elite neo-liberal order, and yet has consequences (e.g., severe weather) that are so easily framed, or ignored, as something else (e.g., "naturally occurring" weather). The analysis presented in this paper provides an overview of four categories of climate-related newspaper frames—social context, causes, consequences, and solutions—in three geographic "regions": Canada, the United States, and around the world. The expectation, based on the media propaganda model, is that the United States, as the reigning global superpower with the greatest interest in the status quo, will be relatively more reluctant to talk about the changing climate and, when discussed,

will be more likely to frame the issue to focus on the social-context issues while diverting attention from the consequences and solutions. In other words, the United States will be interested in framing the climate story so as to avoid critique of the world's largest, and most profitable, industry: oil.

Content and frames: Those who have come before

A variety of climate-related content analyses and framing studies has created a background for the current article. For example, content analysis has been used to explore the relationship between actual temperature and climate change coverage. Ungar's (2000) content analysis of newspapers and television found that the unusually hot weather during the summer of 1988 made climate concerns into a "social scare" and caused a spike in coverage that abated once the weather cooled. Following up on this, Shanahan & Good's (2000) content analysis of *The New York Times* and *The Washington Post* found that while political events and scientific studies were the most likely to correlate with climate coverage, there was a relationship between unusual local temperatures and increased coverage of global climate change. Trumbo's (1995) content analysis explored how the coverage of climate change in one media context can spur coverage in other contexts. Making use of a variety of sources (e.g., the National Newspaper Index, network television, Congressional Records, public opinion polls), he found a kind of cyclical agenda-setting phenomenon, where newspapers covered the climate, which heightened the attention of both the public and pollsters; increasing public awareness in the polls provided an impetus for additional newspaper attention, and television then "spotlighted" this attention.

Several other researchers have used content analyses to explore science in climate change communication. Wilkins' (1993) content analysis of *The New York Times, The Washington Post*, the *Los Angeles Times*, *Time* magazine, and the Associated Press highlighted that coverage of climate issues seemed to be "closely tied to the goals and aims of the scientists they cover" (p. 82), and while this approach served scientific, economic, and governmental communities, other "human values" were left out of the reporting. Bell's (1994) content analysis of broadcast news in New Zealand uncovered that, on average, one in six climate stories contained significant misreporting, all of which were a result of exaggeration. Zehr's (2000) content analysis explored scientific uncertainty as a theme in major newspapers in the United States between 1986 and 1995, finding that scientific uncertainty was an important theme, and one that contributed to the delegitimization of public knowledge.

Other studies have looked at the cyclical nature of climate coverage by newspapers using Downs' (1972) theory of issue-attention cycles (a theory proposing that public attention to domestic issues such as the environment occurs in five stages: pre-problem, alarmed discovery and euphoric enthusiasm, realization of the cost of significant progress, gradual decline of public interest, and establishment of the post-problem stage). Trumbo (1996) found that between the late 1980s and early 1990s, three of Downs' five cycles could be identified in major newspapers in the United States; McComas and Shanahan (1999) found Downs' cycles were able to explain the shifting coverage of climate change themes in *The New York Times* and *The Washington Post* between 1979 and 1996; and Brossard,

Shanahan, and McComas (2004) demonstrated that Downs' cycles were culturally specific, working well with newspaper coverage of climate issues in the United States, but not working for French newspaper coverage.

What the Brossard, Shanahan, and McComas (2004) study highlighted is that the story of the climate is told in different ways in different countries. This is not to say that the story of the climate is uniform within any one country, but that, in general terms, one country may be quite different from another in terms of how the story of the changing climate is told. Mormont and Dasnoy (1995) provided an earlier example of the ways in which countries can differ in their transmission of climate information. The authors proposed different national models for climate communication (e.g., a model that questioned the competency of the media in France and a public communication model for the German media) based on interviews with scientists, journalists, and environmental leaders.

In general terms, the current paper follows methodologically in the footsteps of all these previous climate content studies and in particular parallels the last two examples by conducting a comparative analysis of how climate issues are being framed in the United States, Canada, and around the world. The current article also draws upon Carvalho's (2005) recent analysis that highlighted the framing of climate issues in three major British newspapers: *The Guardian, The Independent,* and *The Times.* Based on her findings, Carvalho (2005) concluded that "the 'quality' press's analysis of the governance of climate change remained within the broad ideological parameters of free-market capitalism and neo-liberalism, avoiding a sustained critique of the possibility of constant economic growth and increasing consumption, and of the profound international injustices associated with the greenhouse effect[3]" (p. 21). Carvalho's (2005) findings mesh perfectly with Herman & Chomsky's (1988) proposition that the news media's role is to present the world in such a way that the status quo will be maintained for those with the greatest economic, social, and political stakes in the current neo-liberal world order. The issue of whether the framing of the climate story in other parts of the world will, as in Britain, "avoid sustained critique" and, in other words, conform to Herman & Chomsky's (1988) media propaganda model is what creates the context for the research questions detailed below.

Asking questions about context, causes, consequences, and solutions

From the perspective of Herman & Chomsky's (1988) media propaganda model, the United States stands out in the discussion of climate issues for a number of reasons. First, as of the beginning of the twenty-first century, the United States is the pre-eminent global superpower (see, for example, Miller, 2005) and, as such, stands to lose the most with any significant change to the status quo. Second, according to the United Nations Framework Convention on Climate Change (UNFCCC), the United States produces more greenhouse gases than any other country in the world (UNFCCC 2003b). Third, the United States, as represented by the administration of George W. Bush, has refused to join 175 other countries in ratifying the Kyoto Protocol (UNFCCC, n.d.). Fourth, the mass media in the United States—including, perhaps especially, its news media—are arguably among the most prolific, and influential, in the world.

Canada is also particularly interesting in a study of the framing of climate issues. First, according to the UNFCCC greenhouse gas inventory, Canada emits a huge quantity of greenhouse gases—34th of 37 Annex 1 (industrialized) countries[4] for overall greenhouse gas emissions (UNFCCC, 2003b) and 34th of 36[5] Annex 1 countries for per capita greenhouse gas emissions. (UNFCCC, 2003a). Second, Canada has a very close relationship with the global superpower and worst overall greenhouse gas emitter, the United States. For example, Canada and the United States have the world's largest bilateral trading relationship. Canada is the greatest export destination for 34 of 50 states and the United States is the recipient of 84% of Canada's exports—highlighted by the fact that Canada is "by a wide margin" the number one supplier of imported energy to the United States (Embassy of the United States of America, n.d.) Third, unlike the United States, Canada ratified the international greenhouse gas reduction commitment known as the Kyoto Protocol (UNFCCC, n.d.)—although there have been critiques that Canada, at the highest levels, has more recently "been skeptical of the science on climate change and has backed away from Canada's Kyoto commitment" ("Science in retreat," 2008). Fourth, as a Commonwealth country, Canada has a relatively close relationship with various members of the European Union—a part of the world that has been active in addressing the potential dangers of a changing climate and very critical of the United States' climate strategy (see, for example, von Storch & Krauss, 2005). Fifth, Canada is within very easy reach of the United States' massive, and extremely influential, news empire.

A broader context for the North American comparison is created by including a measure of the global coverage of climate issues. Given that 175 of the world's almost 200 countries have ratified the Kyoto Protocol (UNFCCC, n.d.), it would seem that the international community is—at least by this measure—more committed to highlighting and addressing climate issues than is the United States. The global acceptance and prominence of climate issues stand in contrast to the behaviours and activities of the United States at the highest levels. According to the British Broadcasting Corporation, President Bush has said that the Kyoto Protocol "would have wrecked our economy" (British Broadcasting Corporation, 2007), and while it is true that President Bush has done some "climate progressive" things, like admitting in his January 2006 State of the Union address that "America is addicted to oil," in March of the same year, he stated that the "fundamental debate is whether climate change is 'manmade or natural'" (Forecast Earth, 2006).

This is not to say that media coverage of climate issues in the United States will mirror the presidential policy of George W. Bush, but even by covering these policies, the frame of the coverage has been somewhat dictated. As Carvalho points out, "[T]he media's depictions of social problems depend on their institutional affiliations, preferences and news values, but invariably build on the ways other social actors organize their claims and draw attention to issues" (2005, p. 3). When a social actor like George W. Bush is drawing attention to and away from issues, it is not only the media in the United States, but also the media in Canada and around the world, that take notice.

Pretending it is not there?

Herman & Chomsky (1988) highlight volume of coverage as a key aspect of their media propaganda model, and Carvalho points out that "[t]he volume of media coverage is the first indictor of the relative salience awarded to an issue over time" (2005, p. 3). If the issue is covered, the next question is what the phenomenon is called. Carvalho explains that until 1988, "greenhouse effect" was used, then "global warming" took over gradually as the name of choice, and by the early 1990s it had become the media's most common term (2005, p. 7). The use of "global warming" has, however, come under fire for being a less accurate descriptor for the climatic changes taking place (i.e., warming is only one outcome of climate change). According to Corbett and Durfee, "global warming needs a more salient metaphor that emphasizes its seriousness, immediacy and scientific credibility" (2004, p. 144). Or as Revkin (2008), drawing on James Lovelock, has said, "Warming is something that's kind of cozy and comfortable. You think of a nice duvet on a cold winter's day." Of course, the fact that it is the Intergovernmental Panel on Climate Change (IPCC), and not the Intergovernmental Panel on Global Warming, gives at least an implicit indication of what the world's scientists believe the phenomenon should be called.

The following research question, therefore, taps into the above issues regarding volume of coverage and terminology and will provide a first glimpse into whether the reporting about the climate in the United States, Canada, and around the world can be understood using Herman & Chomsky's (1998) media propaganda model: How do the volume of climate stories and the name given to the phenomenon being covered by those stories compare for newspapers in Canada, the United States, and the rest of the world?

Focusing on the social context of the problem?

At possibly its most fundamental level, and at the level that is perhaps least threatening to the status quo, the story of climate change is a story of science. As Wilkins has pointed out, "Scientific explanations of the problem [of climate issues] tend to frame the issues in 'science'-driven terms, rather than suggesting that political policy and human choices are the base of the physical phenomenon" (1993, p. 73). In the intervening years since Wilkins' research, climate scientists have come to something as close to a consensus as scientists ever come: that humans are causing the climate to change. Or, as Trumbo and Shanahan point out, "While the degree and speed of such [climate] change is uncertain, the consensus remains that the climate will change in ways that influence both the ecological and human social systems" (2000, p. 199). So, if we have indeed reached a point in history when science has shown that the climate is changing due to human activity, how often is the newspaper story of climate change stuck in the social context, or "nature of the problem," stage—a stage that Carvalho proposed is composed of "politicization, scientification and economic reasoning" (2005, p. 8)? The second research question addresses this: How does the frequency of climate stories in the United States, Canada, and around the world that are framed with science, politics, Kyoto, and economics compare?

What about the causes and consequences of climate changes?

The relationship between the causes and consequences of climate change is fascinating in that while the *causes* of climate change are anthropogenic (e.g., the burning of fossil fuels, especially by industry and transportation), the *consequences* of climate change are "natural" (e.g., weather)—and while the human causes are relatively easy to track and measure over time (e.g., CO^2 in ice core samples), the "natural" consequences are much less so (e.g., changing and extreme weather have always existed). In either case, the framing can divert attention from the human causes (e.g., by talking about greenhouse gases—which have always existed and are not produced solely by us) and from the consequences (e.g., by not linking extreme weather events to a changing climate).

Durfee and Corbett have referred to climate issues as "unobtrusive or invisible issues . . . with which a person lacks real-world experience that could help shape opinion and understanding" (2005, p. 88). In other words, there have always been weather extremes that have affected people's lives, but the media can tell us that what we are experiencing is "natural" (i.e., nature, beyond our control, is to blame) or anthropogenic (i.e., human activity is to blame). Of course, we are also dependent on the media to tell us *which* human activities are to blame. A media propaganda model would predict that when elite interests are threatened by the framing of the causes and consequences of climate issues as anthropogenic, such frames will be avoided. Based on this, the following two research questions are proposed: What is the frequency of newspaper frames in each region that link climate issues with the potential causes of fossil fuels, greenhouse gases, and vehicles/cars/automobiles? What is the frequency of newspaper frames in each region that link the potential consequences of extreme weather, floods, forest fires, storms, and hurricanes with a changing climate?

What about solutions?

If the articulation of causes and consequences of climate issues can be threatening to those with a vested interest in maintaining the status quo, discussing solutions is potentially even more so. The intention with this search is to provide a broad look at how discussion of energy-related solutions (i.e., solutions that are most threatening to the oil industry) compares across the three regions. As such, a final research question is proposed: What is the frequency of newspaper frames in each region that link climate issues with the possible solutions of energy conservation, alternative energy, or renewable energy?

Methodology: Comparing content and frames

The aim of this article is to provide an overview and comparison of the ways in which newspapers from the United States, Canada, and around the world frame climate issues. This analysis was done using LexisNexis keyword searches on three newspaper databases:

1. Major United States newspapers—According to LexisNexis, the Major U.S. Newspapers database contains English language newspapers published in the United States that are listed in the top 50 in circulation in Editor & Publisher Year Book. (The 40 newspapers in this database can be found in Appendix A.)

2. Major Canadian newspapers—This database was created by the author (LexisNexis does not have such a list), based on the largest-circulation English newspaper from each province and territory (as determined by the Canadian Newspaper Association, http://www.cna-acj.ca, and based on LexisNexis' availability) and the addition of the two national newspapers. (The 15 newspapers in this database can be found in Appendix B.)
3. Major (non–United States) international newspapers—According to LexisNexis, the Major Non-U.S. Newspapers database contains English language newspapers published outside the United States that are listed as a national newspaper in Benn's World Media Directory or one of the top 5% in circulation for the country. (The 70 newspapers from this database can be found in Appendix C.)

Each search was done using keywords (see Tables 1 through 5 of the "results" section below for the actual keywords used) in the title and lead paragraphs of articles from each of the databases. A sample of articles found as a result of the database searches were then read and qualitatively analyzed based on the focus provided by the research question.[6] The time period studied was January 1, 2007, to December 31, 2007. This year was chosen because 2007 was a particularly important year for climate issues; 2007 will perhaps be remembered as a turning-point year in which there was general growth in concern about the climate (e.g., see "A Nobel Prize to public science communication," 2007) and in which debate, at least for many in the scientific community, shifted from "Is the climate changing?" to "What should we do about the changing climate?" For example, in 2007 the Intergovernmental Panel on Climate Change (IPCC) stated that "[m]ost of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations . . ." (IPCC, 2007, p. 10, italics in the original). Additionally, by 2007 the Kyoto Protocol had been ratified by 175 countries (UNFCCC, n.d.), and this was also the year in which the Nobel Peace Prize was awarded in honour of the climate—to Al Gore and the IPCC—as was an Oscar for Gore's documentary *An Inconvenient Truth* (Gibbs & Lyall, 2007).

Resisting (climate) change? Findings and discussion

Frequency and terminology

The results of the first search, based on the research question regarding the volume and terminology of climate stories, revealed that Canadian newspapers talked about climate change and global warming much more often in total and per paper than either newspapers in the United States or international papers. See Table 1 for keywords used in the search and the results. (Note: Numbers in all of the tables are rounded to the nearest full number—or are presented as zero if the number was less than 0.5.)

Table 1. Total stories and number of stories per newspaper: Jan. 1, 2007–Dec. 31, 2007

Search terms	Canada Total / # per paper	United States Total / # per paper	International Total / # per paper
"climate change"	4,571 / 305	2,123 / 53	10,601 / 151
"global warming"	3,358 / 224	3,922 / 98	4,650 / 66
"greenhouse effect"	22 / 2	11 / 0	55 / 1
avg.	**2,650 / 177**	**2,019 / 50**	**5,102 / 73**

Telling stories that help to maintain the status quo and avoiding stories that challenge privilege and power are key elements of Herman & Chomsky's (1988) media propaganda model. The finding that newspapers in the United States are less than one third as likely to have climate change or global warming stories than newspapers in Canada, and about two thirds as likely to have those stories than international newspapers is, therefore, not surprising. The finding is important given that previous studies have highlighted an agenda-setting effect for the volume of coverage of climate issues. For example, Trumbo & Shanahan found that the "the levels of poll respondents stating they were 'very or extremely concerned' about [climate issues] rose and fell in concert with increases and decreases . . . in news coverage of the issue" (2000, p. 202).

The findings also illuminate that newspapers in the United States are much more likely than Canadian or international newspapers to refer to climate issues as "global warming" as opposed to "climate change." While this is an important finding—especially when considered in conjunction with the United States' relative lack of coverage of climate issues—the actual content of the articles highlights that the distinction between the terms "global warming" and "climate change" may be blurring (i.e., on numerous occasions, the terms "global warming" and "climate change" are used interchangeably). For example, the following is from a *Washington Post* article: "I point this out not to challenge the reality of *global warming* or the fact that it's caused in large part by humans, but because the discussion about *climate change* has turned into a nasty dustup, with one side arguing that we're headed for catastrophe and the other maintaining that it's all a hoax" (Lomborg, 2007, p. B01, italics added).

In order to assess how frequently "climate change" and "global warming" were used in the same articles, additional searches were done on each of the newspaper databases for "climate change" in the title or lead paragraphs and "global warming" in the body of the article, and vice versa. All of the newspapers had a degree of overlap. The greatest overlap was for newspapers from the United States with "climate change" in the title or lead paragraphs and "global warming" in the body (which happened in 70% of the results—compared with 44% for the Canadian papers and 38% for the international papers). Newspaper stories in American papers with "global warming" in the title or lead paragraphs and "cli-

mate change" in the body occurred 50% of the time (55% in Canadian papers and 56% for international papers).[7] Based on these results, it would seem that while "global warming" is most likely to be found in newspapers in the United States, a certain degree of blurring of the terms does seem to be happening and perhaps raises the question of whether *either* term adequately captures the seriousness of the globe's current climate issues. This question is returned to in the "Conclusions" section of this paper.

What might be understood as a positive finding from the exploration of terminology was that the term "greenhouse effect" was used very rarely. The term "greenhouse effect" refers to a climate phenomenon that is "not an area of scientific debate" (Wilson, 1995, p. 82), or "arguably the best accepted theory in climatology" (Wilkins, 1993, p. 72), relates to the way in which the earth traps heat from the sun and makes the earth warm enough to be inhabited. Therefore, news outlets' very limited use of "greenhouse effect" seems to indicate a certain sophistication about this phenomenon and what differentiates it from both climate change and global warming. Given how infrequently the term "greenhouse effect" was used in the articles, the decision was made not to use "greenhouse effect" as a search item in future analyses.

The popularity of social context frames

The second research question asked about social context, or "nature of the problem," stories. Keywords used in this search[8], as well as the results from this search, can be found in Table 2.

The results of the search reveal that climate newspaper stories in the United States were more likely to be framed with science than Canadian and international stories, but science was still the most popular frame for all three "regions." What the content of the articles highlighted, however, was that while science and scientists were certainly present in the telling of the story, they were not often present, as they were historically, to question the *reality* of climate change (see Zehr, 2000). Trumbo (1996) pointed out that this early climate questioning was an essential role for scientists to play, but as the science made the relationship between human activity and climate issues more certain, the framing of climate change as uncertain became problematic for the public's understanding of the issues (see also Boykoff & Boykoff, 2004; Corbett & Durfee, 2004). In the newspaper stories analyzed for the current paper, science is often present as confirmation of the changing climate and less often as a questioner of that reality. For example, the following from a Reuters story in the *Calgary Herald* illustrates how scientists are used not to question, but to matter-of-factly confirm climate change: "Arctic sea ice melted to its lowest level in recorded history this week, shattering a record set in 2005 and continuing a trend spurred by human-caused global warming, scientists said Thursday" ("Arctic ice at record low levels, say U.S. scientists," 2007, p. A15).

Another highlight from the second research question was that American newspaper stories were less likely to be framed with the Kyoto Protocol. The possibility for media propaganda here is twofold: first, that perhaps a lack of coverage will mean a lack of engagement of the American people in the issue of the Kyoto Protocol (see for example, Krosnick, Holbrook, & Visser's 2000 finding

that the 1997 Kyoto debate influenced public opinion); second, that while the Canadian and international presses are more likely to cover Kyoto issues, as Gelbspan found, the articles from outside the United States tend not to be about the "major divide" between the United States and the rest of the world (2005, p. 78). In other words, even though Canada and the rest of the world may talk about Kyoto, they are probably not talking about the fact that the United States essentially stands alone in its refusal to ratify the Protocol.

Table 2. Social context/Nature of the problem: Story topic as a percentage of total climate change/global warming stories and as total articles per newspaper, Jan. 1, 2007–Dec. 31, 2007

Search terms	Canada % Total / # per paper	United States % Total / # per paper	International % Total / # per paper
"climate change" & "scien!"	16% / 49	27% / 14	14% / 21
"global warming" & "scien!	21% / 48	22% / 21	24% / 16
avg.	**19% / 48**	**25% / 18**	**19% / 19**
"climate change" & "Kyoto"	14% / 41	3% / 2	9% / 13
"global warming" & "Kyoto"	9% / 19	2% / 2	6% / 4
avg.	**12% / 30**	**3% / 2**	**8% / 9**
"climate change" & "politic!"	12% / 38	11% / 6	12% / 19
"global warming" & "politic!"	10% / 22	10% / 10	12% / 8
avg.	**11% / 30**	**10% / 8**	**11% / 14**
"climate change" & "econom!'	11% / 33	9% / 5	12% / 19
"global warming" & "econom!"	9% / 20	8% / 8	9% / 7
avg.	**10% / 28**	**9% / 7**	**11% / 13**

The keywords related to politics and economics were distributed quite evenly across the American, Canadian, and international papers (with international stories somewhat more likely to be framed with economics).

Don't blame us: Resisting human causes/Embracing "natural" weather

The third research question related to the causes of climate change. The keywords used in the search and the results can be found in Table 3.

Table 3. Causes: Story topic as a percentage of total climate change or global warming stories and as total articles per newspaper, Jan. 1, 2007–Dec. 31, 2007

Search terms	Canada % Total / # per paper	United States % Total / # per paper	International % Total / # per paper
"climate change" & "greenhouse gas!"	15% / 46	22% / 12	14% / 21
"global warming" & "greenhouse gas!"	17% / 39	20% / 20	15% / 10
avg.	**16% / 43**	**21% / 16**	**15% / 16**
"climate change" & "cars" or "vehicle!" or "automobile!"	5% / 15	7% / 4	4% / 6
"global warming" & "cars" or "vehicle!"	7% / 15	10% / 10	7% / 5
avg.	**6% / 15**	**9% / 7**	**6% / 6**
"climate change" & "fossil fuel!"	2% / 6	3% / 2	1% / 2
"global warming" & "fossil fuel!"	3% / 6	3% / 3	3% / 2
avg.	**3% / 6**	**3% / 3**	**2% / 2**

The results of the keyword search revealed that newspapers in the United States are somewhat more likely than Canadian or international newspapers to have greenhouse gas frames—and all three databases have about the same percentage of car/automobile/vehicle and fossil fuel frames. Interestingly, newspapers in all three "regions" were much more likely to frame climate change stories with "greenhouse gasses" than "fossil fuels." A media propaganda analysis might propose that stories framed with "naturally occurring" and "scientifically undisputed" greenhouse gasses (discussed above), as opposed to anthropogenic fossil fuels, are less threatening.

A closer examination of the car/vehicle/automobile stories indicated some acceptance of the science of climate change (discussed above) and some criticism of the United States' current relationship with the car. This quote from an April 3, 2007, edition of the *San Francisco Chronicle* offers an example: "The 5-4 ruling [on fuel efficiency], the most important environmental decision the court has

issued in many years, clears the way for current and future federal administrations to set mandatory limits on motor vehicle emissions of carbon dioxide and other heat-trapping gases—a leading cause of planet-wide temperature increases, according to an overwhelming majority of scientists" (Egelko, 2007, p. A1). There was also some indication that journalists are thinking critically about Americans' continued love affair with driving alone (see for example, Venkataraman, 2007), but generally the car frames were limited (less than 10% for any "region") and lacking in critical analysis.

The fourth research question asked about the framing of the consequences of climate change. The results indicated that 5% or less of any newspaper's climate change coverage included these weather-related consequence frames. See Table 4 for the keywords used in the search, as well as the results.

Table 4. Consequences: Story topic as a percentage of total climate change or global warming stories and as total articles per newspaper, Jan. 1, 2007–Dec. 31, 2007

Search terms	Canada % Total / # per paper	United States % Total / # per paper	International % Total / # per paper
"climate change" & "extreme weather"	1% / 2	0% / 0.0	1% / 1
"global warming" & "extreme weather"	1% / 1	0% / 0.0	1% / 1
avg.	**2% / 2**	**0% / 0.0**	**1% / 1**
"climate change" & "flood!"	2% / 6	3% / 2	3% / 4
"global warming" & "flood!"	2% / 5	3% / 3	4% / 3
avg.	**2% / 6**	**3% / 3**	**4% / 4**
"climate change" & "forest fire!"	0% / 1	0% / 0	0% / 0
"global warming" & "forest fire!"	0% / 1	0% / 0	0% / 0
avg.	**0% / 1**	**3% / 0**	**2% / 0**
"climate change" & "hurricane!" or "storm!"	3% / 9	5% / 2	2% / 4
"global warming" & "hurricane!" or "storm!"	3% / 7	4% / 4	4% / 3
avg.	**3% / 8**	**5% / 3**	**3% / 4**

Gelbspan has observed that journalists have missed, or avoided, the climate change consequences of weather extremes: "With the convergence of more coverage and information, one might assume that journalists working on these stories would include the line, 'Scientists associate this pattern of violent weather with global warming.' But they don't" (2005, p. 79). His observation, one in keeping with the media propaganda model, certainly seems to have been borne out by these results. Extreme weather—hurricanes, storms, flooding, forest fires—is the way in which climate change is obtrusive, or manifest in people's lives. The avoidance of linking these weather extremes with climate change is perhaps the most powerful way that the mass media do not, according to the media propaganda model, "merely protect the corporate system. [They also rob] the public of a chance to understand the real world" (Bagdikian, 1980, p. *x*).

Resisting change

If, however, the consequences of climate change frames are threatening to the "corporate system," arguably the climate change frames that are the most threatening are those that refer to oil reduction solutions such as energy conservation, alternative energy, and renewable energy. The fifth research question asked about the frequency of climate change stories framed with these solutions. See Table 5 for the keywords used in the search, as well as the results.

Table 5. Solutions: Story topic as a percentage of total climate change or global warming stories and as total articles per newspaper, Jan. 1, 2007–Dec. 31, 2007

Search terms	Canada % Total / # per paper	United States % Total / # per paper	International % Total / # per paper
"climate change" & "energy conserv!"	0% / 1	0% / 0	0% / 0
"global warming!" & "energy conserv"	0% / 1	1% / 1	0% / 0
avg.	**0% / 1**	**1% / 1**	**0% / 0**
"climate change" & "alternative energy"	0% / 1	1% / 1	0% / 1
"global warming" & "alternative energy"	0% / 1	1% / 1	0% / 0
avg.	**0% / 1**	**1% / 1**	**0% / 1**
"climate change" & "renewable energy"	1% / 2	2% / 1	2% / 3
"global warming" & "renewable energy"	0% / 1	2% / 2	1% / 1
avg.	**1% / 2**	**2% / 2**	**2% / 2**

The findings from this search reveal that no newspaper frames climate change or global warming with solution frames more than 2% of the time. One could argue that these are not the only possible solution frames and that solutions may, in fact, be a part of frames highlighted in other sections—the Kyoto Protocol frame, for example. This is of course true, in the same way that none of the frames can claim exclusivity. As with the other searches, however, the attempt here was to tap into the relative weight given to the framing categories of social context, causes, consequences, and solutions. McChesney (1998) has proposed that neo-liberalism's most important message—and by extension the most important message for the media—is that there is no alternative to the status quo. If this is the media's most important message, is it possible that this message means that it is hugely difficult for the story of climate change to be framed as one of oil reduction solutions?

Propagating the status quo? Conclusions

"A propaganda model," wrote Herman & Chomsky, "traces the routes by which money and power are able to filter out the news fit to print, marginalize dissent, and allow the government and dominant private interests to get their messages across the public" (1988, p. 2). The purpose of this study was to ascertain whether such a model could be used to understand the newspaper framing of climate change.

That Canadian newspapers are three times as likely to have a climate change or global warming story than American ones, and that international papers are almost 30% more likely to have such stories than the United States, is important, as it created the context for all of the framing results that followed. As agenda-setting studies have shown, the quantity of climate change coverage affects the understanding of the issue (Trumbo & Shanahan, 2000)—or as Dunwoody succinctly offered, "issues covered by the media are considered to be more important than those not so well covered" (2005, p. 90). It would seem that the underlying message from newspapers in the United States is that climate change is not all that important.

Terminology was also explored, and newspapers in the United States were more likely to refer to climate issues as "global warming," a term that some have proposed is lacking in accuracy and urgency (e.g., Corbett & Durfee, 2004; Revkin, 2008), as opposed to "climate change." On further investigation, however, it was found "climate change" and "global warming" were often used in the same article in all three databases. In the end, even if "climate change" is more accurate, and urgent, than "global warming" as a descriptor for the wide-ranging effects we can expect, the German term "Klimakatastrophe"—"climate catastrophe"—highlighted by von Storch & Krauss (2005), or "atmosphere cancer" and "pollution death" proposed by Revkin (2008), may be even more accurate, and effective, than either "global warming" or "climate change."

The social context framing of climate change, or what Carvalho referred to as the "nature of the problem" topics of politicization, scientification, and economic reasoning (2005, p. 8), revealed that newspapers in the United States were more likely to frame stories about climate change and global warming with discussions of science than were either the Canadian newspapers or the international newspapers. In fact, on average, almost a quarter of all climate change/global

warming newspaper stories in the United States were framed with science. The search also revealed that newspapers in the United States were less likely than the Canadian or international papers to frame climate stories with the Kyoto Protocol. This combination of "more science" and "less Kyoto" fits nicely into the media propaganda model. Research has shown that the way in which climate change has been framed with science has often led to a sense that the science of climate change is uncertain (see Corbett & Durfee, 2004, for an overview) and if the Kyoto Protocol is being covered rarely in the United States, then the fact that the United States is one of the only countries in the world not to ratify the agreement is also not being discussed.

It would seem, however, that the science frame in the articles studied here has moved somewhat beyond "is the climate changing?" (a question that carries with it the journalistic "responsibility" to create space for both the "yes" side and the "no" side—an issue that Boykoff and Boykoff, 2004, explore in detail), to science-based discussions of "what will be the effects of an already changing climate?" Likewise, when the Kyoto Protocol *is* framed with climate change/global warming in U.S. articles (which, it should be noted, happened just over 2% of the time), the stories can be critical of the United States administration and its failure to ratify the Protocol.

The media propaganda model can perhaps also help us to make sense of the results of the "causes" search. The model would predict that a "natural" cause frame such as "greenhouse gases" would be more frequent than an anthropogenic cause frame such as "fossil fuels"—and this was the case. The greenhouse gas frame was the second-most-common frame for all three "regions" (only the "science" frame was more frequent), and it was the only other frame, along with science, that was somewhat more "popular" in the United States. The media propaganda model would encourage us not to be surprised that the greenhouse gas frame and the science frame are the two most common frames and that they are the only two in which the United States is significantly higher than Canada and the rest of the world.

It is, however, the results of the consequences and solutions frames that are the most illustrative of the media propaganda model's perhaps counterintuitive claim that debate, criticism, and dissent all play an important role in the maintenance of the status quo—as long as these occur within the structure of elite consensus. The analyses presented here highlight that the story of climate change is being told (even within the United States, albeit somewhat less frequently) and that there is debate, criticism, and dissent. When the frames move into more potentially threatening territory, however, such as the linking of climate change with extreme weather events or decreasing/different energy use, the story frequency plummets.

In an October 2007 *Newsweek* poll, 39% of Americans said "there is a lot of disagreement among climate scientists," 42% said "there is a lot of disagreement that human activities are a major cause of global warming," and less than half of Americans, 46%, said that climate change is being experienced today (Begley, 2007, p. 22). Not surprisingly, less than half of Americans recently indicated in a GlobeScan Inc. survey that personal action would be necessary to address climate

change (O'Neil, 2007). If numbers like these are going to change, so too must the stories we tell.

Acknowledging the limitations and encouraging future research

What content analyses are able to present in terms of breadth of overview, or what Gitlin refers to as the "surface content of the news" (1980, p. 305), is offset by what they are unable to comment on in terms of depth of the readers' comprehension or learning, attitude, or behaviour change. This is certainly true of the current content analysis, as its breadth includes numerous analyses across three geographic areas. Clearly, articles that are framed with the same keywords can overlap (e.g., various keywords can appear in the same title and lead paragraphs) and articles from the same search can have very different meanings (i.e., articles framed with "science" can question climate change science or pronounce that the science is irrefutable). It is also true that the same article will be interpreted, and potentially acted upon, in very different ways by different readers.

The idea, therefore, has not been to present definitive analyses or prescriptions, but rather to offer glimpses of what is being said about climate change (i.e., if articles are much more likely to be framed with science, from any "angle," and not alternative/renewable energy, from any angle, then this says something) and possible directions for future research.

It should also be highlighted that all of the newspapers represented by these databases are English-language newspapers. This is clearly a potential limitation of the study and was a methodological decision based entirely on the limits of resources. That said, as a study exploring the framing of climate issues based on a propaganda model, I do think that a case can be made regarding the perhaps disproportionate influence that English-language newspapers have in both the United States and also around the world and that they are thus of perhaps disproportionate interest in such a study.

Similarly, the current content analysis is also potentially limited by the comparability of the three newspaper databases. In particular, LexisNexis' "formula" for major non-U.S. english newspapers—based on Benn's listing of the publication as a national newspaper in its *World Media Directory* or its appearance in the top 5% of newspaper circulation for the country—means that there are some sources that are not daily newspapers. Therefore, while the case can certainly be made that the current paper has uncovered the kinds of stories that are told about climate change around the world, the relative frequency of those stories should be understood as general guides rather than absolute facts.

In the end, it does seem that any research that encourages introspection about the communication of climate change is important at this time. In other words, there are all kinds of directions future research could take: content analyses could take a more in-depth look at the stories; other countries could be compared; other media could be studied; experimental approaches like Corbett & Durfee's (2004) could explore other variables related to (un)certainty, (in)action, and (mis)understanding; ethnographic studies could look at the on-the-ground details of how climate realities do and do not become news (e.g., Gelbspan's 2005 story that auto/gas advertisers threatened to pull advertising if links were made between "natural disasters" and climate change); and so on—but the research needs to be

done. Begley's *Newsweek* article "The Truth About Denial" concluded by saying that only the "climate itself" will be able to affect what Americans, and by extension people everywhere, are willing to do to "stave off the worst of global warming" (2007, p. 29). Yet while what we experience in our daily lives will be critical, so too will the stories we are told about what we are experiencing—and research can help in making those stories effective agents of change.

Notes

1. A previous version of this article was submitted to the Mass Communication division of the National Communication Association annual conference, 2008.
2. The name given to how the climate is changing—whether "climate change," "global warming," or "greenhouse effect"—is complicated and politically charged. As such, until the question of terminology has been explored, an attempt has been made to use more general terms such as "climate issues" to refer to phenomena that would otherwise be given one of these other titles.
3. The use of "greenhouse effect" here seems unfortunate. While the author uses "climate change" elsewhere in the paper, it is unclear why the less appropriate "greenhouse effect" was used in this instance. (The question of why "greenhouse effect" is not an effective way to refer to these climate issues is explored later in this paper.)
4. Annex 1 countries are industrialized Organization for Economic Cooperation and Development (OECD) countries as of 1992 plus countries that have "in transition" economies.
5. Only 36 countries are listed as part of this indicator.
6. Results of 20 articles or fewer were all read, for results of 20 to 100 articles, every fifth article was read, and for more than 100 articles, every tenth article was read.
7. Until this point in the paper, the neutral term "climate issues" has been used to talk about the climate. Now that terminology has been explored, the term "climate change" will be used in the rest of the paper, with the understanding that either "climate change" or "global warming" could have been used.
8. Exclamation marks as part of search terms indicate that the search was for all words having that base (e.g., "scien!" would search for all terms beginning with "scien").

References

A Nobel Prize to public science communication. (2007). *Journal of Science Communication, 6*(4). URL: http://jcom.sissa.it/archive/06/04/Jcom0604(2007)E/ [March 20, 2008].

Arctic ice at record low levels, say U.S. scientists. (2007, September 21). *Calgary Herald*, p. A15.

Bagdikian, Ben. (1980). *The media monopoly*. Boston, MA: Beacon Press.

Begley, Sharon. (2007, August 13). The truth about denial. *Newsweek*, 20-29.

Bell, Allan. (1994). Media (mis)communication on the science of climate change. *Public Understanding of Science*, *3*, 259-275.

Boykoff, Maxwell, & Boykoff, Jules. (2004). Balance as bias: Global warming and the U.S. prestige press. *Global Environmental Change, 14,* 125-136.

British Broadcasting Corporation (BBC). (2007). *Bush rejects Kyoto-style G8 deal.* URL: http://news.bbc.co.uk/2/hi/americas/4647383.stm [October 27, 2007].

Brossard, Dominique, Shanahan, James, & McComas, Katherine. (2004). Are issue-cycles culturally constructed? A comparison of French and American coverage of global climate change. *Mass Communication & Society, 7*(3), 359-377.

Carvalho, Anabela. (2005). Representing the politics of the greenhouse effect: Discursive strategies in the British media. *Critical Discourse Studies, 2*(1), 1-29.

Chomsky, Noam. (1999). *Profit over people: Neoliberalism and the global order.* New York, NY: Seven Stories Press.

Corbett, Julia, & Durfee, Jessica. (2004). Testing public (un)certainty of science: Media representations of global warming. *Science Communication, 26*(2), 129-151.

Downs, Anthony. (1972). Up and down with ecology—The "issue-attention cycle." *The Public Interest, 28,* 38-51.

Dunwoody, Sharon. (2005, Winter). Weight-of-evidence reporting: What is it? Why use it? *Nieman Reports, 59*(4), 89-91.

Durfee, Jessica, & Corbett, Julia. (2005, Winter). Context and controversy: Global warming coverage. *Nieman Reports, 59*(4), 88-89.

Egelko, Bob. (2007, April 3). Ruling helps California battle global warming; Supreme Court affirms that states can limit greenhouse gases, attorney general says. The San Francisco Chronicle, p. A1.

Embassy of the United States of America. [http://canada.usembassy.gov/content/can_usa/pdfs/didyouknow.pdf, n.d.] [October 27, 2007].

Forecast Earth (2006). URL: http://climateweather.com/promo/hotList_Bush.html [March 20, 2008].

Gelbspan, Ross. (2005, Winter). Disinformation, financial pressures and misplaced balance: A reporter describes the systematic forces that work against the story of climate change being accurately told. *Nieman Reports, 59*(4), 77-79.

Gibbs, Walter, & Lyall, Sarah. (2007, October 13). Gore shares peace prize for climate change work. *The New York Times*. URL: http://www.nytimes.com/2007/10/13/world/13nobel.html?_r=1&oref=slogin [October 25, 2007].

Gitlin, Todd. (1980). *The whole world is watching: Mass media in the making and unmaking of the new left.* Los Angeles, CA: University of California Press Ltd.

Hall, Stuart. (1977). Culture, the media and "ideological effect." In J. Curran, M. Gurevitch, & J. Woollacott (Eds.), *Mass communication and society* (315-348). London, U.K.: Edward Arnold.

Herman, Edward, & Chomsky, Noam. (1988). *Manufacturing consent: The political economy of the mass media*. New York, NY: Pantheon Books.

Intergovernmental Panel on Climate Change (IPCC). (2007). Summary for policymakers. *Climate change 2007: The physical science basis. Contribution of Working Group I to the fourth assessment report of the Intergovernmental Panel on Climate Change*. URL: http://www.ipcc.ch/pdf/assessment-report/ar4/wg1/ar4-wg1-spm.pdf [October 20, 2007].

Krosnick, Jon, Holbrook, Allyson, & Visser, Penny. (2000). The impact of the fall 1997 debate about global warming on American public opinion. *Public Understanding of Science, 9*(3), 239-260.

Lomborg, Bjorn. (2007, October 7). Chill out. Stop fighting over global warming—here's the smart way to attack it. The Washington Post, p. B01.

McChesney, Robert. (1998). Introduction. In N. Chomsky, Profit over people: Neoliberalism and global order, p. 7-16. New York, NY: Seven Stories Press.

McComas, Katherine, & Shanahan, James. (1999). Telling stories about global climate change: Measuring the impact of narratives on issue cycles. *Communication Research*, *26*(1), 30-57.

Miller, Lyman. (2005). China an emerging superpower? *Stanford Journal of International Relations.* URL: http://www.stanford.edu/group/sjir/6.1.03_miller.html [October 30, 2007].

Mormont, Marc, & Dasnoy, Christine. (1995). Source strategies and the mediatization of climate change. *Media, Culture & Society, 17*(1)*,* 49-64.

O'Neil, Peter. (2007, November 5). Canadians would accept personal sacrifices to curb climate change: Poll. CanWest News Service. URL: http://www.canada.com/topics/news/story.html?id=446e75aa-34b7-4101-bab1-7969a53a2499 [March 7, 2008].

Revkin, Andrew. (2008, February 18). Global heating, atmosphere cancer, pollution death. What's in a name? *Dot Earth*, NYTimes.com blog. URL: http://dotearth.blogs.nytimes.com/2008/02/18 [March 7, 2008].

Science in retreat: Canada has been scientifically healthy. Not so its government. (2008, February 21). *Nature,* 451, 866.

Shanahan, James, & Good, Jennifer. (2000). Heat and hot air: Influence of local temperature on journalists' coverage of global warming. *Public Understanding of Science, 9*(3), 285-295.

Trumbo, Craig. (1995). Longitudinal modeling of public issues: An application of the agenda-setting process to the issue of global warming. *Journalism and Mass Communication Monographs*, *152*, p. 1.

Trumbo, Craig. (1996). Constructing climate change: Claims and frames in U.S. news coverage of an environmental issue. *Public Understanding of Science, 5*(3)*,* 269-283.

Trumbo, Craig, & Shanahan, James. (2000). Social research on climate change: Where we have been, where we are and where we might go. *Public Understanding of Science, 9*(3), 199-204.

Ungar, Sheldon. (2000). Knowledge, ignorance and the popular culture: Climate change versus the ozone hole. *Public Understanding of Science, 9*(3), 297-312.

United Nations Framework Convention on Climate Change (UNFCCC). (2003a). Indicator: Greenhouse gas emissions per capita, 2003. URL: http://globalis.gvu.unu.edu/indicator.cfm?Country=CA&indicatorID=199 [October 30, 2007].

United Nations Framework Convention on Climate Change (UNFCCC). (2003b). Indicator: Total greenhouse gas emissions, 2003. URL: http://globalis.gvu.unu.edu/indicator.cfm?IndicatorID=196&country=CA#rowCA [October 30, 2007].

United Nations Framework Convention on Climate Change (UNFCCC). (n.d.) *Kyoto Protocol*. URL: http://unfccc.int/kyoto_protocol/items/2830.php [October 27, 2007].

Venkataraman, Bina. (2007, June 25). More US commuters drive solo. Christian Science Monitor, p. 2.

von Storch, Hans, & Krauss, Werner. (2005, Winter). Culture contributes to perceptions of climate change: A comparison between the United States and Germany reveals insights about why journalists in each country report about the issue in different ways. *Nieman Reports, 59*(4), 99-102.

Wilkins, Lee. (1993). Between facts and values: Print media coverage of the greenhouse effect, 1987-1990. *Public Understanding of Science, 2*(1)*,* 71-84.

Wilson, Kris. (1995). Mass media as sources of global warming knowledge. *Mass Communication Review, 22*(1/2), 75-79.

Zehr, Stephen. (2000). Public representations of scientific uncertainty about global climate change. *Public Understanding of Science, 9*(3), 85-103.

Appendix A
Newspapers (40) in the LexisNexis "Major U.S. newspaper" database

Arkansas Democrat-Gazette
Chicago Sun-Times
Daily News (New York)
Information Bank Abstracts
The Journal of Commerce
Los Angeles Times
Newsday
Pittsburgh Post-Gazette
The Sacramento Bee
San Antonio Express-News
The San Diego Union-Tribune
St. Louis Post-Dispatch
The St. Petersburg Times
Star Tribune (Minneapolis, MN)
The Atlanta Journal-Constitution
The Baltimore Sun
The Boston Globe
Boston Herald
The Buffalo News
The Christian Science Monitor
The Columbus Dispatch
The Denver Post
The Hartford Courant
Houston Chronicle
Milwaukee Journal Sentinel
New York Post
The New York Times
The New York Times – Biographical Materials
The New York Times – Government Biographical Materials
The Oregonian
Philadelphia Daily News (PA)
The Philadelphia Inquirer
The Plain Dealer
San Francisco Chronicle
Seattle Times
The Tampa Tribune
The Times-Picayune
The Washington Post
The Washington Post – Biographical Stories
USA Today

Note: English language newspapers published in the United States that are listed in the top 50 in circulation in *Editor and Publisher Yearbook*.

Appendix B
Newspapers (15) in the "Major Canadian newspaper" database

Calgary Herald
The Edmonton Journal
The Gazette (Montréal)
The Globe and Mail
The Guardian (Charlottetown)
The Daily News (Halifax)
National Post
Ottawa Citizen
The StarPhoenix (Saskatoon)
The Telegram (St. John's)
The Toronto Star
Times Colonist (Victoria)
The Vancouver Sun
Winnipeg Sun
Yukon News

Notes

Canada's two national newspapers and the largest-circulation daily broadsheet in each province and territory according the the Canadian Newspaper Association and as available from LexisNexis.

The circulation for the *Calgary Herald* and *The Edmonton Journal* are so similar that both newspapers were included.

The Gazette is the largest English daily broadsheet in Québec.

The Chronicle-Herald is Nova Scotia's largest daily broadsheet newspaper, but it was not available in the LexisNexis database for the kind of search done for this article.

Ottawa Citizen was included, as it is the largest-circulation daily broadsheet from the nation's capital.

Times Colonist was included as the largest-circulation daily on Vancouver Island.

Winnipeg Free Press is Manitoba's largest daily broadsheet newspaper, but it was not available in the LexisNexis database for the kind of search done for this article.

Yukon News is not a daily newspaper (it is available three days a week), but it is the most widely read newspaper in the territory (and *Whitehorse Star* is not available in the LexisNexis database for the kind of search done in this article).

The Canadian newspaper circulation information is from the *Canadian Daily Newspaper Circulation Data* (2006). URL: http://www.cna-acj.ca/Client/CNA/cna.nsf/object/CircData06/$file/CIRCULATION%20DATA%202006.pdf.

Appendix C
Newspapers (70) in the Lexis Nexis "Major non-U.S. newspaper" database

Airfinance Journal
Air Traffic Management
Alpha
Alternative Investment News
Asialaw
Asiamoney
Business Times (Malaysia)
China Law & Practice
Compliance Reporter
Corporate Financing Week
Credit Investment News
The Daily Telegraph and The Sunday Telegraph (Sydney, Aus)
Defined Contributions & Savings Plan Alert
Derivatives Week
Euromoney
EuroWeek
Financial Times (London)
Foundation & Endowment Money Management
Fund Action
Gazeta Mercantil Online
Global Investor
Global Money Management
Global Telecoms Business
Herald Sun/Sunday Herald Sun (Melbourne, Aus)
Het Financieele Dagblad (English)
Hydrocarbon Processing
Institutional Investor (U.S. Edition)
Institutional Investor (Int'l Edition)
International Securities Finance
LatinFinance
Money Management Letter
New Straits Times (Malaysia)
Operations Management
*Ottawa Citizen**
Petroleum Economist
Power, Finance & Risk
Private Asset Management
Project Finance
Reactions
Real Estate Finance & Investment
South China Morning Post
The Advertiser/Sunday Mail (S. Aus)
The Age (Melbourne, Aus)
The Australian
The Business Times (Singapore)
The Courier Mail/The Sunday Mail (Aus)
The Daily/Sunday Telegraph (London)
The Daily Yomiuri (Tokyo)
The Dominion (Wellington, NZ)
The Dominion Post (Wellington, New Zealand)
The Evening Post (Wellington, NZ)
The Gazette (Montréal)*
The Globe and Mail (Canada)*
The Guardian (London)
The Herald (Glasgow)
The Independent/The Independent on Sunday (London)
The Irish Times
The Jerusalem Post
Mercury/Sunday Tasmanian (Aus)
The New Zealand Herald
The Observer
The Press (Christchurch, NZ)
The Scotsman/Scotland on Sunday
The Straits Times (Singapore)
The Sydney Morning Herald (Aus)
*The Toronto Star**
Total Securitization
Trade Finance
Wall Street Letter
World Oil

Note: English language newspapers published outside the United States are listed as national newspapers in *Benn's World Media Directory* or are one of the top five per cent in circulation for the country. The four asterisked newspapers in Appendix C are Canadian newspapers that can also be found in the major Canadian database.