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Title: Flogging a Dead Norm? Newspaper Coverage of Anthropogenic Climate Change in the United States and United Kingdom from 2003-2006

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Does 'balanced' media coverage of anthropogenic climate change remain a significant feature in United States (US) reporting? Is it a part of United Kingdom (UK) coverage? This empirical study examines print media representations of anthropogenic climate change from 2003 to 2006 through analyses of US and UK newspapers. Results show significant divergence in US reporting from scientific consensus on anthropogenic climate change in 2003 and 2004, and no significant difference in UK coverage across the study period. Findings inform ongoing considerations regarding the terms and conditions through which current and future climate policy and action is negotiated and implemented.

Key words: United States, United Kingdom, climate change, content analysis, mass media, policy

Introduction

Generally, the professionalized journalistic norm of ‘balanced reporting’ has been considered a vital tool in carrying out neutral or ‘objective’ reporting, providing “both sides in any significant dispute with roughly equal attention” (Entman 1989, 30). However, when covering anthropogenic climate change, the insertion of balance in this way can prove problematic. In fact, rather than providing accurate information, such ‘balanced’ reporting instead perpetrates informational bias regarding scientific consensus on human contributions to climate change. This paper pursues the following questions: does ‘balanced’ media coverage (commonly called ‘he said/she said’ reporting) of anthropogenic climate change remain a significant feature in United States (US) reporting? Is it a part of United Kingdom (UK) coverage in recent years?

In recent decades, scientific understanding of attribution to climate change has evolved. In the last decade, reports and findings have signaled a broad scientific consensus that humans have been contributing to modern climate change – despite lingering uncertainties regarding the *extent* of attribution. For instance, the recently released United Nations-sponsored Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report (AR4) from Working Group I (WGI) states, “Most of the observed increase in globally averaged temperatures since the mid-20th century is *very likely* due to the observed increase in anthropogenic greenhouse gas concentrations” (IPCC 2007, 8, emphasis added). This IPCC statement is the product of over 2,500 of planet Earth’s top climate scientists’ reviews and assessments of physical science research on climate change. Fielding over 30,000 comments on drafts of the document from experts and governments, this multi-stage peer-review and consensus process represents a clear view of the state of scientific understanding of climate change. On the topic of anthropogenic climate change, IPCC statements are consistent with those from numerous national science academies and other scientific organizations. Moreover, a 2004 study of peer-reviewed scientific research on climate change from 1993 through 2003 found unanimous agreement regarding the presence of a human ‘signal’ in climate change (Oreskes 2004).

While acknowledging that this scientific consensus is not the ‘truth’ translated, this ‘policy-relevant’ information has been a critical input to implementation of national and international climate policy. Such solidified discourse on anthropogenic climate change has thus tethered institutional considerations of policy alternatives to discursive frames and ‘storylines’ (Hajer 1995). In national contexts, divergent climate policy priorities and stances have contributed to complex interactions of public trust in authority and conflict over decision-making (Lorenzoni and Pidgeon 2006). Mass media have constituted key non-state interventions in shaping the variegated, politicized terrain within which people perceive, understand and engage with climate science and policy (Bord et al. 2000; Krosnick et al. 2006; Leiserowitz 2006). In combination, the arena of climate policy implementation is contentious, and thus one particularly open to measured constructivist interventions through spatially-informed geographic approaches (Burgess 2005). When the process of framing – whereby meanings are constructed and reinforced – confuses rather than clarifies scientific understanding of anthropogenic climate change via the media, this can create spaces for federal policy actors to defray responsibility and delay action regarding climate change.

In this high-stakes arena of climate science, policy, media and public understanding, there has been a great deal of speculation regarding how this journalistic practice has been used or has ‘disappeared’ from reporting on anthropogenic climate change in recent years. The US

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and UK federal governments have been important actors in policy negotiations, reputed historically as both foot-draggers and champions of climate policy cooperation. Therefore, this study systematically interrogates these media practices through content analysis of US and UK newspapers from 2003 to 2006 in order to determine whether this remains a contributor to informationally biased reporting in these key countries, or if we are now flogging a dead norm.

Methods

The data set for the study was composed of newspaper articles from US and UK ‘prestige press’ or ‘quality’ newspapers from 2003 through 2006. The research examined the *Los Angeles Times*, the *New York Times*, *USA Today*, the *Wall Street Journal*, and the *Washington Post* in the US, and the *Independent* (and *Sunday Independent*), the *Times* (and *Sunday Times*), and the *Guardian* (and *Observer*) in the UK. The sample set was accessed and compiled through the search engines *Lexis Nexis* and *Proquest/ABI Inform* using the key phrases ‘climate change’ and ‘global warming’.

In the US, these newspapers are considered ‘first-tier’ or ‘prestige-press’ newspaper sources, and each has an average daily circulation of nearly one million (Audit Bureau of Circulations 2006). In the UK, these newspapers are also considered the most influential newspapers, and each have average daily circulations of over 200,000 (Audit Bureau of Circulations 2007). Table 1 lists average daily circulation for each newspaper. Through a weighting measure by size of the country population, this table provides a measure of the reach and influence of these news dailies. While this estimation offers insights into their relative quantitative reach and influence, in terms of qualitative variables (such as type of readership), previous research has identified these sources as critically influential in ongoing policy discourse and decision-making at national and international levels (McChesney 1999; Doyle 2002). Policy actors have routinely monitored these sources for salient aspects of contemporary public discourse, including climate change science. Moreover, beyond directly reaching their readers, each of these newspapers also influences news coverage in secondary sources. Other reporters, editors, and publishers consult these sources for decisional cues on what is ‘newsworthy’, and stories are then frequently repurposed in regional and local print outlets. Therefore, news coverage in these sources provides opportunities to track the dominant news frames associated with anthropogenic climate change (Carvalho and Burgess 2005; Boykoff and Boykoff 2007).

[Table I here]

In these newspapers, 9465 articles were published from 2003 through 2006, where 2543 articles appeared in US newspapers and 6922 were in UK print sources. By systematically beginning from a random starting point in January 2003, the sample was a random selection of every sixth article as it appeared chronologically. Thus, the sample from this population consisted of 1607 articles, or 17% of the population. The US news articles consisted of 27% from the *Los Angeles Times*, 33% from the *New York Times*, 7% from *USA Today*, 12% from the *Wall Street Journal* and 21% from the *Washington Post*. The UK news articles consisted of 35% from the *Guardian* (and the *Observer*), 36% from the *Independent* (and *Sunday Independent*), and 29% from the *Times* (and *Sunday Times*). Through quantitative content analysis, codes were assigned for varying treatment of anthropogenic climate change in each article. The coding was determined not just through frequency assessments of comments or frequencies of words or

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phrases. Importance was placed on the labeling of quoted sources, utilization of terminology, framing of relevant issues, and identification of salience of elements in the text, as well as tone, and relationships between clusters of messages.¹

Results

Figure 1 shows the changing quantity of newspaper coverage in the US and UK by month across the four years. Over time, there was a steady increase in coverage leading up to the end of the study period, marked by a more rapid increase in UK newspaper coverage. In fact, coverage quadrupled in U.K newspapers in 2006 as compared to 2003 while it increased approximately two-and-a-half times during the same period in the US. While more is not necessarily better, figure 1 helps to identify key discursive moments in climate science-policy, as captured through media attention.

[Figure 1 here]

Peaks in UK coverage of anthropogenic climate change

The two largest increases in coverage in the UK took place during the periods of June-July 2005 and September-November 2006. June-July 2005 was marked by two particularly prominent moments at the science-policy interface that garnered heavy newspaper coverage: the Group of Eight (G8) Summit in Gleneagles, Scotland, and increased scrutiny over greenhouse gas emissions from air travel. The G8 summit was strategically preceded by a joint statement by eleven leading international science bodies – including the UK Royal Society and the US National Academy of Sciences – stating that “it is likely that most of the warming in recent decades can be attributed to human activities” (Joint Science Academies Statement 2005, 1). News coverage linked this joint statement to the G8 meeting. For instance, *Guardian* Science Correspondent David Adam reported that it “increase[s] pressure on George Bush and other world leaders to tackle climate change” (Adam 2005, 4). During this same period of June-July 2005, media reports were outlining European Commission investigations of a tax on aviation fuel, emissions charges and the potential inclusion of aviation in European Emissions Trading Schemes (see also Bailey in this issue). This coincided with the UK summer holiday season and school break, thus spurring discussions of ‘carbon offsetting’ in media reports as well as critiques therein.

The second increase in coverage – September-November 2006 – can be attributed primarily to a series of key and interrelated events. Mid-September marked the UK release of the Al Gore film ‘An Inconvenient Truth’. This film contributed to an upsurge in news reporting directly through personalized coverage of Al Gore, as well as indirectly as a news hook for covering related climate change issues. Then, in late-September Britain’s Royal Society took dramatic action in putting out an open letter to Esso, the UK division of ExxonMobil to request that they stop funding groups engaged in deliberate disinformation campaigns to undermine scientific consensus on climate change. The Royal Society also stated that these ExxonMobil-funded groups have “misrepresented the science of climate change by outright denial of the evidence”, and critiqued ExxonMobil’s public statements on climate change as “inaccurate and misleading” (Adam 2006, 1). Closely following this statement, Richard Branson made his much publicized ‘donation’ of three billion dollars on renewable energy initiatives and biofuel research (see Walker in this issue on social engagement in renewable energy). This personalized story

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was widely reported: both hailed as a philanthropic act and critiqued as the funds were to be invested in Virgin Fuels rather than donated to another organization. The concatenate intersections of climate change, carbon-based industry, celebrity politicians and politicized celebrities contributed to an upsurge in media coverage.

Further increases in coverage during this period were connected to the much anticipated, discussed and criticized ‘Stern Review’, released on October 30, 2006. For instance, the *Times* reported, “The science debate is effectively over. The Stern review means that the economic debate is all but over. Only the political debate is left...” (Cavendish 2006, 7). Intense media coverage of the Stern Review fed into media attention for the Twelfth Conference of Parties (COP12) meeting in Nairobi, Kenya that began approximately a week later. This conference discussed implementation of the first phase of the Kyoto Protocol as well as possibilities for participation from key ‘developing’ countries – such as China and India – beginning in 2012. These events and issues that led up to the conference boosted already heavy media coverage and linked to articles on public sentiment regarding climate policy action, such as the November ‘Stop Climate Chaos’ rally that attracted thousands of people to London’s Trafalgar Square.

Peaks in US coverage of anthropogenic climate change

In terms of US coverage, the largest increase coincided with the end of this second period in the U.K – November 2006. This upsurge was associated largely also with attention paid to the Stern Review as well as COP12 in Nairobi. However, these events primed connected media coverage of US federal climate policy through the news hook of the mid-term Congressional elections and prominent State-level climate policy action. What had not been a particularly legible voting issue in previous elections had become rallying points for politicians in State elections as well as for Democrats seeking to regain control of both houses of US Congress. For instance, Arnold Schwarzenegger gained widespread recognition for signing into law a California bill to cap greenhouse gas emissions from industry, and this helped his reelection campaign (Finnegan 2006). Moreover, Democratic control of the US Senate meant that Barbara Boxer (Democrat – California) replaced James Inhofe (Republican - Oklahoma) as Chair of the Senate Environment and Public Works Committee. Inhofe notably said on the Senate floor (and repeated many times since) “could it be that man-made global warming is the greatest hoax ever perpetrated on the American people? It sure sounds like it” (Inhofe 2003). In contrast, Boxer has called global warming “the greatest challenge of our generation,” and has articulated plans for Congressional legislation to curb anthropogenic greenhouse gas emissions (Simon 2006, A12).

The second largest increase in US coverage – May-June 2006 – contributed to climate change as an election issue in November. Chiefly, climate policy rhetoric in the elections was catalyzed by heavy media coverage of the end-of-May-2006 US release of the film ‘An Inconvenient Truth’. US newspaper reports on the film release spanned the News, Business, Entertainment and Style sections, thus pushing climate change from an ‘environmental issue’ to one garnering the attention of a wide range of interests and constituents, thereby permeating many political, economic, social and ‘celebrity’ issues.² Such reach was evidenced by a *Washington Post* Style section article that covered the glamour of the documentary premier (Argetsinger and Roberts 2006) as well as commentary such as ‘Business World: Warmed Over’ in the *Wall Street Journal* (Jenkins Jr. 2006). In addition, during this time the US Supreme Court agreed to take on the long-awaited case regarding whether the Environmental Protection Agency had the authority to regulate greenhouse gas emissions under the federal Clean Air Act. This case

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turned on whether carbon dioxide was treated as a ‘pollutant’, and this question – coupled with increased media attention from Gore’s film – generated an upswing in coverage.

Tracking the ebbs and flows of coverage over this time provides a foundation for more specific content analysis of media reporting on human contributions to climate change in the US and U.K contexts. This approach also facilitates the identification of ‘critical discourse moments’ where media representational practices may have shifted (Chilton 1987). Results from these analyses show that the portion of US coverage that provided ‘balanced accounts’ of anthropogenic climate change decreased over the time period. In 2003, 37% of coverage afforded ‘roughly equal attention’ to the views that humans were contributing to climate change and that human contributions to climate change were negligible. However, the percentage of the latter representations decreased to 10% in 2004, 8% in 2005 and 3% in 2006. Meanwhile coverage that depicted anthropogenic contributions as significant – in line with scientific consensus – increased from 61% in 2003, to 90% in 2004, 92% in 2005 and 97% in 2006 (Figure 2). Statistical tests of difference – through z-scores comparing ratios – were then conducted to determine if this divergence of media coverage from scientific consensus was significant. In other words, this test sought to reveal if reporting had perpetrated an informational bias regarding scientific consensus through the use of the professionalized journalistic norm of ‘balanced’ reporting. These analyses found that US media representations of anthropogenic climate change were significantly divergent from the scientific consensus in 2003 through 2004. However, this divergence was no longer significant in 2005 and 2006 (Table II). Previous analyses of US newspaper coverage of climate change found that coverage from 1990 through 2002 had diverged from the consensus view that humans very likely contribute to climate change (Boykoff and Boykoff, 2004). These new results show that this trend continued for an additional two years, but ended by 2005.

[Figure 2 here]

[Table II here]

In UK newspapers, the percentage of coverage providing ‘roughly equal attention’ to these views was comparatively lower in 2003, and remained low throughout the time under investigation. In 2003, 2% of coverage was ‘balanced’, with around 1% in 2004 and 2005, and 0.4% in 2006. During this time, reporting that anthropogenic contributions to climate change are significant – in line with scientific consensus – comprised 98% to 99% of total coverage during these years (Figure 3). Tests of these differences in coverage from the scientific perspective on anthropogenic climate change did not find them to be significant. Put differently, these results showed the UK newspapers did not significantly carry out informationally biased coverage of anthropogenic climate change through the employment of the journalistic norm of ‘balanced’ reporting (Table III).

[Figure 3 here]

[Table III here]

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Discussion

Why might this shift have taken place in media reporting in the US? These results from analyses of media representations of anthropogenic climate change reveal a shift in coverage in 2005 from explicitly ‘balanced’ accounts to more accurate reporting. There was a dramatic increase in the quantity of coverage in the 1980s in the U.S and UK (Boykoff and Boykoff 2004; Carvalho 2005). However, this shift in 2005 appears to be more evolutionary than revolutionary. The contributing influences in 2005 can be considered in three primary ways: *political*, *scientific*, and *ecological/meteorological* (Boykoff and Boykoff 2007).

First, primarily *political* movements in climate rhetoric and policy promises comprised a substantial amount of coverage. Coverage of the aforementioned G8 Summit in Gleneagles, Scotland is a prominent example. Leading up to the Summit on his home soil Prime Minister Tony Blair voiced strong climate policy rhetoric, as he saw this meeting as an opportunity to leave a positive “legacy” regarding committed policy action (Lean 2005, 18). Moreover, en route to the meeting, George W. Bush made his clearest statement regarding anthropogenic climate change to date at a news conference in Denmark. He declared, “I recognize that the surface of the Earth is warmer and that an increase in greenhouse gases caused by humans is contributing to the problem” (VandeHei 2005, A14). The Blair and Bush statements fed into tremendous speculation and media attention in the US regarding the potential for a shift in the Bush Administration climate policy stance. A communiqué that came out of the meeting also acknowledged human contributions to climate change, and this contained the signature of President Bush, despite previous equivocating on the subject. This coverage was also primed by climate policy pronouncements at the state level that upped the stakes on US federal climate policy action. A few weeks earlier, Arnold Schwarzenegger gained widespread media attention as he signed an Executive Order that called for greenhouse gas emissions reductions of 80% by 2050 for the state of California. This prompted headlines across all the major US newspapers the following day such as ‘California Sets Emission Goals that are Stiffer than US Plan’ in the *Wall Street Journal* (Ball 2005), and ‘Gov. Vows Attack on Global Warming’ in the *Los Angeles Times* (Bustillo 2005). Together, these multi-scale movements by key political figures contributed to shifts in the treatment of anthropogenic climate change in US newspapers.

Second, primarily *scientific* activities contributed to this critical discourse moment. Generating particular media attention was news leaked to the *New York Times* regarding drafts of the report by the US Climate Change Science Program. After this report had completed multiple stages of peer review by climate scientists, it was revealed that Philip Cooney – Bush White House Chief of Staff for the Council on Environmental Quality (CEQ) – had made a number of key changes to the document before the final version was published. For instance, before the word ‘uncertainties’ Cooney had placed the words ‘significant and fundamental’, which then “tend[ed] to produce an air of doubt about findings that most climate experts say are robust” (Revkin 2005, A1). This was seen as a violation of scientific integrity to suit vested carbon-based industry interests and ideologies, particularly once it was revealed that Cooney previously worked as a lobbyist for the American Petroleum Institute. Media scrutiny continued when it was revealed that his consequent resignation from the CEQ was followed just three days later by accepting a consultant position with ExxonMobil. Moreover, the aforementioned joint statement by eleven international science bodies also influenced media treatment of climate change. This statement that humans contribute to climate change was released just as news was unfolding regarding Philip Cooney’s editing of the climate science documents. It was also significant that

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this statement included the science bodies of ‘developing’ countries Brazil, China and India (Joint Science Academies Statement 2005) as media coverage noted how this bridged a tension regarding responsibility for emissions and reductions between the North and South.

Third, *ecological/meteorological* events in 2005 expressed biophysical agency and thus contributed to a shift in US reporting on climate change. Among various events such as heat waves, droughts, and floods, the most dramatic was Hurricane Katrina, which made landfall in the US Gulf Coast. While scientific research is still debating the extent of connections between hurricane intensity and frequency and climate change, Katrina prompted widespread speculation and discussion in climate policy and public circles. Despite scientific caution on the topic, this event sparked many media reports to consider human activities in relation to future storm events and climate change. As Juliet Eilperin reported in *the Washington Post*, “Katrina's destructiveness has given a sharp new edge to the ongoing debate over whether the United States should do more to curb greenhouse gas emissions linked to global warming” (Eilperin 2005, A16). Considerations of links to implementation of international climate policy in the public domain were further fueled by comments made by prominent political actors. For instance, Jurgen Trittin – Minister of the Environment in Germany – commented, “The American president has closed his eyes to the economic and human damage that natural catastrophes such as Katrina – in other words, disasters caused by a lack of climate protection measures – can visit on his country” (Bernstein 2005, D5). Ecological/meteorological events such as these fed into ongoing discussions regarding potential international climate policy progress, and contributed to a critical discourse moment in media coverage.

Such dynamic intersections fed into this discursive shift. These movements not only shaped ongoing media representations of discourse regarding human contributions to climate change, but these media representations also fed back into ongoing interactions at the science-policy interface. For instance, media shifts from these political, scientific and ecological/meteorological issues were embodied in a piece by Dan Vergano in *USA Today* entitled ‘The Debate is Over: Globe Is Warming’. In it, he writes, “Don’t look now, but the ground has shifted on global warming. After decades of debate over whether the planet is heating and, if so, whose fault it is, divergent groups are joining hands with little fanfare to deal with a problem they say people can no longer avoid” (Vergano 2005, 1A).³ This piece was followed two days later by a *USA Today* editorial, with the headline ‘Yes the globe is warming, even if Bush denies it’ (USA Today 2005, 10A).

In addition to explaining this shift in the United States, a second set of questions center on comparisons and contrasts between US and UK media coverage: why was there not a significant divergence in reporting on anthropogenic climate change in the UK? How was coverage in the UK different from that in the US before 2005? As general comparisons, the US and UK contexts are similar. For a better part of two centuries, influential policy actors in both the UK and US have shared a common commitment to neoliberal development frameworks, utilitarian views of environmental services and exploitative interactions with nature. Moreover, in both contexts, deeply entrenched technological optimism has also influenced the wider regulatory architectures within which climate policy is situated (Boykoff and Rajan 2007). Through time, similar competing factors – such as state-control over the public sphere and low literacy rates – influenced media growth (Starr 2004). Despite impediments, modern media communications have expanded their reach and influence over time as mass-circulation printing presses emerged in urban centers, and mass media outlets formed increasingly significant and

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powerful social, political, economic and cultural institutions. This widespread use and commercialization of media embodied often-conflicting impulses of expanding democratic speech and corporate capitalist pursuits. Regarding contrasts, two notions are most salient in terms of media coverage of anthropogenic climate change: *domestic environments*, and the *uses of context and labeling*. The former considers complexities primarily at the national and community scale, while the latter deals primarily with actions of individual journalists and editors.

The first notion centers on key political economic and cultural variants that influence reporting. Prominent among them are differentiated regulatory and societal networks and institutions that have shaped varied carbon-based industry decision-making behavior and practices; similarly, carbon-based industry interests have thus shaped divergent federal climate policy priorities and actions (Pulver 2007). In the UK, both Labour and Tories have taken up aggressive climate policy rhetoric, while resistance to international climate policy implementation has primarily been the province of the US Republican Party. For instance, the Bush administration has not followed advice from leading government agencies in making international climate policy cooperation a priority. In a 2001 report, the National Academy of Sciences (NAS) reaffirmed the presence of an anthropogenic signal in climate change, stated the risks and the need for policy action (NAS 2001). In 2002, an Environmental Protection Agency (EPA) report concluded, “The science is strongest on the fact that carbon dioxide is contributing, and will continue to contribute, to global climate change...it is clear that global warming is an issue that must be addressed” (EPA 2002). Bush has dismissively called them “report[s] put out by the bureaucracy” (Seelye 2002, A23).

Moreover, in both countries – for over a century – carbon-based industry interests have exerted asymmetrical power in influencing climate policy. However, associated scientists and policy actors that have questioned the significance of human contributions – often dubbed ‘climate contrarians’ – have been primarily housed in US universities, think tanks and lobbying organizations (McCright 2007). Contrarian voices emerged in the late 1980s primarily through the Global Climate Coalition, which represented a consortium of primarily US-based coal and oil interests. These groups have since earned particularly privileged access to certain influential policy actors in the US in crafting climate legislation (Leggett 2001). That anthropogenic climate change-dissenter and best-selling fiction author of ‘State of Fear’ Michael Crichton⁴ has been reported to have consulted President George W. Bush on climate policy (Janofsky 2006) while the President ignores the advice of the NAS and EPA can be attributed in part to a confluence of interests and objectives. Past research has examined how these individuals and groups have developed competing discourses that disempowered top climate science, and effectively reframed climate change science and policy issues with greater uncertainty, thus breeding greater public confusion (Zehr 2000; McCright and Dunlap 2003). These contrarian groups have clearly also sought to gain discursive traction through the media, and similarly, carbon-based industry interests have pursued media coverage by raising the visibility of climate contrarianism. For instance, in February 2007, *the Guardian* newspaper revealed that the US-based American Enterprise Institute – which receives funding from ExxonMobil – has offered \$10,000 “for articles that emphasize the shortcomings of a [recently released] report from the UN IPCC” (Sample 2007, 1). However, amid abundantly evident ties between carbon-based industry, contrarian lobbying, and US Federal Administration climate policy, the important issue is not necessarily the funding sources. Rather, as Oreskes points out, “the issue is that the research is

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supported by a sponsor who wants a *particular* result...and the researchers know in advance what that outcome is, producing an explicit conflict of interest, which undermines the integrity of the research performed” (Oreskes 2004, 381).

However, explanations for formerly divergent but now similarly more accurate coverage in the US and UK – evidenced by the aforementioned results – links to a second salient point regarding *contextualization and labeling* in reporting at the level of journalists and editors. While it has widely been accepted that censorship of dissenting views is both a misguided tact and a judgment destined for positivist failure, just *how* contrarians have been treated through time has differed on opposite sides of the Atlantic. Previous research has found that situating controversial information in a larger context of the climate change issue has helped mitigate against perceived uncertainty and confusion (Corbett and Durfee 2004). Varied treatment of contrarians in the US press before 2005 vis-à-vis UK coverage reveals key contributions to such perceptions of uncertainty, and hence informational bias. For instance, in coverage of US-based oil multinational ExxonMobil, a *New York Times* article entitled ‘Exxon Backs Groups that Question Global Warming’ began:

Exxon Mobil has publicly softened its stance toward global warming over the last year, with a pledge of \$10 million in annual donations for 10 years to Stanford University for climate research. At the same time, the company, the world's largest oil and gas concern, has increased donations to Washington-based policy groups that, like Exxon itself, *question the human role in global warming* and argue that proposed government policies to limit carbon dioxide emissions associated with global warming are too heavy handed... "There is this whole issue that no one should question the science of global climate change that is ludicrous. That's the kind of dark-ages thinking that gets you in a lot of trouble" [Tom Cirigliano, a spokesperson for ExxonMobil] noted.... (Lee 2003, C5, emphasis added)

The US article was consistent with much US coverage before 2005. In this case, it focused attention on the multi-faceted philanthropy of ExxonMobil while also flatly reporting the company’s view of anthropogenic climate change. This was bolstered by the quote from the ExxonMobil representative, as the overall article provided scant context within which such assertions sit in the larger view of the widespread scientific consensus on human contributions to climate change. In the UK context, however, an article appeared in *the Independent* entitled ‘Exxon Spends Millions to Case Doubt on Warming’. It reported, “The world's largest energy company is still spending hundreds of thousands of dollars to fund European organisations that *seek to cast doubt on the scientific consensus on global warming* and undermine support for legislation to curb emission of greenhouse gases” (Buncombe and Castle 2006, 32, emphasis added). While these excerpts cannot sufficiently provide information regarding framing throughout each news story as well as tone and relationships between clusters of messages, it does provide a window – and hence afford the opportunity – to examine divergent patterns of reporting in the US and UK before 2005. Overall, amid waves of climate change rhetoric, while UK media sources situated movements in larger contexts regarding anthropogenic climate science, before 2005 US newspaper sources routinely leaned on the journalistic norm of ‘balance’ and simply reported on rhetoric and action. Dunwoody and Peters have called this reliance on ‘balance’ a “surrogate for validity checks” (1992, 210) that, as the US case suggests, had contributed to reporting that diverged from scientific consensus on anthropogenic climate change.

Conclusion

This paper examined how the employment of the journalistic norm of ‘balance’ in the US and UK – as well as dynamic interactions therein – possibly has contributed to ongoing framings of climate policy implementation. The recently restated consensus regarding anthropogenic climate science – through the IPCC AR4 WGI – and suspected shifts in media coverage of it warranted this analysis. In carrying it out, this work also identified some important ways in which mass media in each country have shaped, and continue to shape, the ongoing construction and maintenance of anthropogenic climate change discourse. This paper also explored how different country contexts have engendered varying media representational practices, which in turn have contributed – in complex and non-linear ways – to divergent priorities in global climate change policy and politics. Therefore this represents another example as to how climate change science and policy have shaped media reporting and public understanding as well as how journalism and public concern have also shaped ongoing climate science and policy decisions. Results and analyses are helpful in analyzing the terms and conditions through which current and future climate policy and action is negotiated and undertaken.

This research finds that the application of this journalistic norm to scientific consensus on human-induced climate change in these newspapers is no longer evident, and thus, these results suggest that we may now be flogging a dead norm. Nonetheless, many challenges remain. This research informs further considerations of key impediments to greater international climate policy cooperation in the US and UK, as well as facilitates and refines substantive discussions of ongoing challenges at the science-policy interface. Moreover, this analysis contributes to continued efforts to analyze ongoing issues regarding the role of mass media in climate science-policy interactions (Wilson 1995; McComas and Shanahan 1999; Smith 2005; Baron 2006). Science on anthropogenic climate change remains a historicized process and consensus does not represent the end of the tale, but rather a period in the ongoing story.

This focus has been on media representational practices; however, responsibilities as well as opportunities lay within science, policy and public communities as well. Therefore, more media coverage of climate change – and fair and accurate coverage at that – will not necessarily solve these issues. For instance, studies have shown that without some kind of knowledge of science to help provide a foundation of understanding to follow ongoing issues, more journalism will not help (Miller et al. 1997). However, these results can prove useful for shared responsibility for improving public understanding and enhancing policy implementation in other scientific issues as well. This work nests itself into larger ‘cultural circuits’ of climate change policy reflection and action (Carvalho and Burgess 2005), that are themselves situated in ongoing multi-scale socio-political and biophysical influences that frame policy alternatives. Thus, instead of a looking to revolutionary paradigmatic change, we shall continue to work towards a creeping evolution in how non-state actors such as mass media influence climate policy implementation and more broadly science-policy interactions.

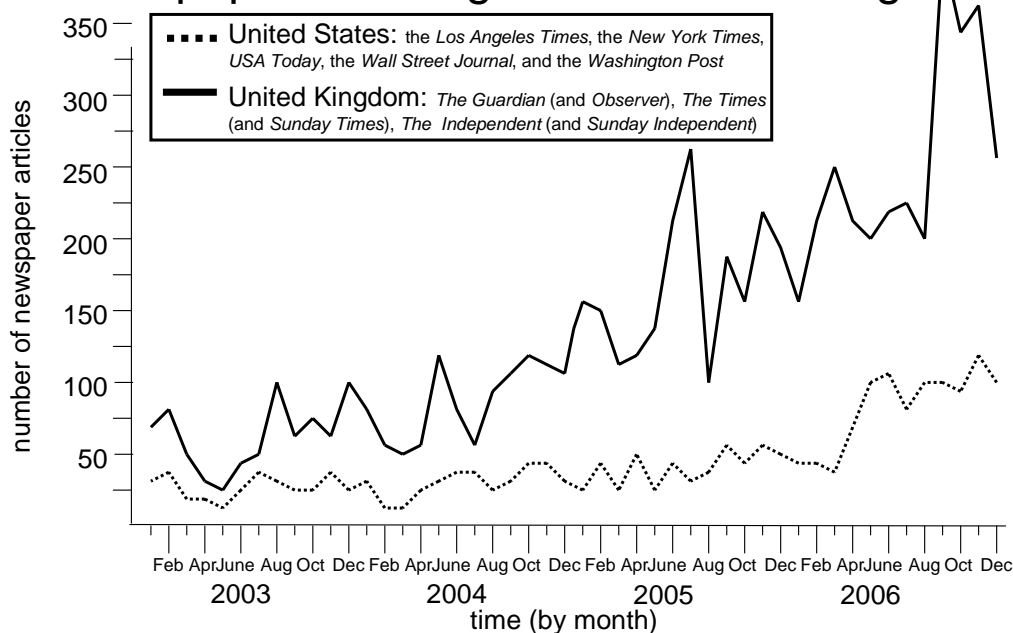
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Table I: Average Daily Circulation/Circulation per issue for Selected US and UK Newspapers, 2006

Newspaper	Average Daily Circulation / Circulation per Issue	Average Daily Circulation / Circulation per Issue per capita (x 10 ³)
<i>The Los Angeles Times</i>	1,231,318	4.1
<i>The New York Times</i>	1,683,855	5.6
<i>USA Today</i>	2,528,437	8.4
<i>The Wall Street Journal</i>	2,058,342	6.9
<i>The Washington Post</i>	960,684	3.2
<i>The Guardian (and Observer)</i>	375,666	6.3
<i>The Independent (and Sunday Independent)</i>	233,058	3.9
<i>The Times (and Sunday Times)</i>	718,221	12.0

Note: The United States newspapers circulation is from the first three months of 2006 due to data availability (Audit Bureau of Circulations 2006) and the United Kingdom newspaper circulation information is based on information between 27 November and 31 December 2006 (Audit Bureau of Circulations 2007). For the UK newspapers, the Sunday circulation is weighted (1/7) in compiling the figures, and the *USA Today* does not have a weekend edition. The per capita figures are estimated by US population of approximately 300 million and UK population figures of approximately 60 million residents.

Figure 1: United States and United Kingdom Newspaper Coverage of Climate Change



This figure tracks variations in the quantity of coverage in the newspaper sources noted above.

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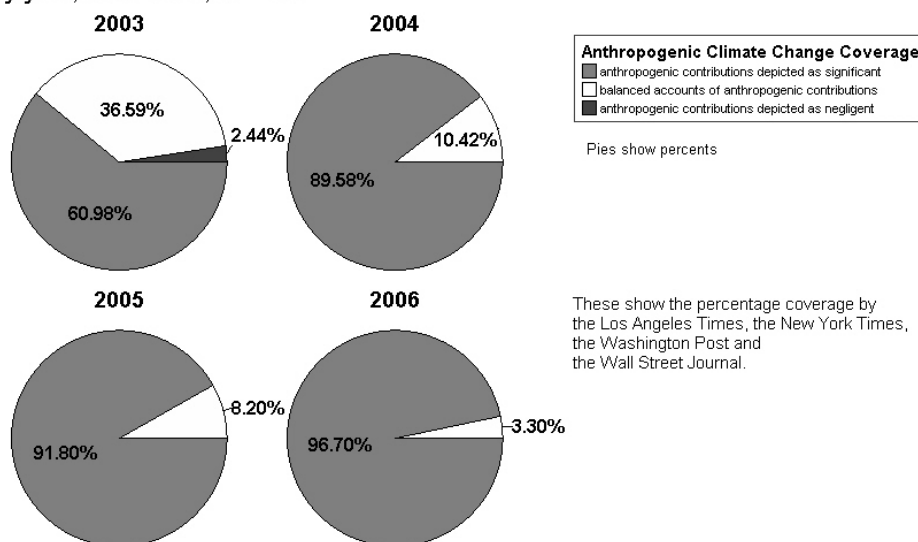
Table II: US Newspaper Discourse and Scientific Discourse Regarding Anthropogenic Climate Change: By Year, 2003-2006; n = 421

YEAR	Coverage of climate change science depicting significant human contributions (by percent)	‘Balanced’ coverage of anthropogenic climate change (by percent)	Coverage of climate change science depicting negligent human contributions (by percent)	Was the difference between newspaper coverage and climate science consensus statistically significant?
2003	61.0	36.6	2.4	Yes ***
2004	89.6	10.4	0	Yes *
2005	91.8	8.2	0	No
2006	96.7	3.3	0	No

Note: The newspapers analyzed here were the *Los Angeles Times*, the *New York Times*, the *Wall Street Journal*, and the *Washington Post*. When the *USA Today* was included, the strength of significance did not change (The z-scores per year were as follows: 2003 – 7.68; 2004 – 2.12; 2005 – 1.84; 2006 – 1.20). The numbers represent the percentages of coverage in each year. The first column represents coverage of significant human contributions to climate change that accurately reflects climate science consensus. The significance of the divergence of the US newspaper coverage from the climate science consensus regarding anthropogenic climate change was determined through z-scores that compare proportions. (The z-scores per year: 2003 – 7.73; 2004 – 2.22; 2005 – 1.92; 2006 – 1.31); * p < .05, ** p < .01, *** p < .001

Figure 2: U.S. Newspaper Coverage of Anthropogenic Climate Change

by year, 2003-2006, N = 421



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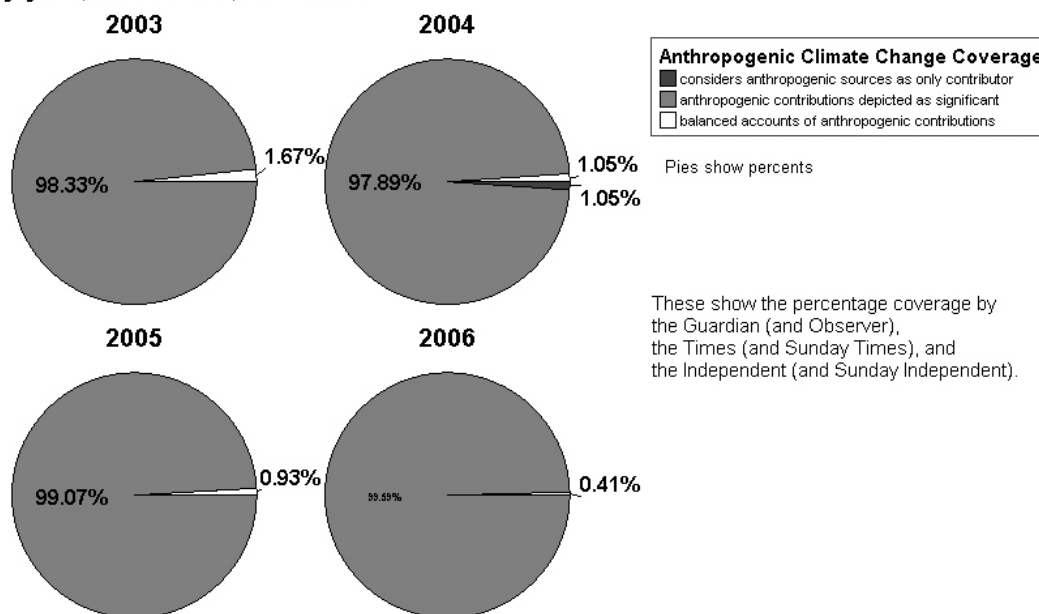
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Table III: UK Newspaper Discourse and Scientific Discourse Regarding Anthropogenic Climate Change: By Year, 2003-2006; n = 1060

YEAR	Coverage of climate science depicting exclusive human contributions (by percent)	Coverage of climate change science depicting significant human contributions (by percent)	‘Balanced’ coverage of anthropogenic climate change (by percent)	Was the difference between newspaper coverage and climate science consensus statistically significant?
2003	0	98.3	1.7	No
2004	1.05	97.9	1.05	No
2005	0	99.1	0.9	No
2006	0	99.6	0.4	No

Note: The newspapers analyzed here were the *Independent* (and *Sunday Independent*), the *Times* (and *Sunday Times*), and the *Guardian* (and *Sunday Observer*). The numbers represent the percentages of coverage in each year. The first column represents coverage of significant human contributions to climate change that accurately reflects climate science consensus. The significance of the divergence of the US newspaper coverage from the climate science consensus regarding anthropogenic climate change was determined through z-scores that compare proportions. (The z-scores per year were as follows: 2003 – 0.47; 2004 – 0.37; 2005 – 0.49; 2006 – 0.47); * p < .05, ** p < .01, *** p < .001

Figure 3: U.K. Newspaper Coverage of Anthropogenic Climate Change by year, 2003-2006, N = 1060



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Endnotes

¹ Multiple stages of pilot testing were carried out independently on this content analysis measure to evaluate assessments of the employment of this journalistic norm. Also accounting for spuriousness, these analyses of sources in the US and UK across the four-year period produced an inter-coder reliability rate of 93.4%. This level of reliability meets established criteria for acceptable inter-coder reliability. This was conducted in coordination with colleagues Michael K. Goodman, Lecturer at King's College London School of Geography and Jules M. Boykoff, Assistant Professor of Political Science at Pacific University.

² This film was similarly influential in the UK context when it was released in September 2006, as mentioned above.

³ Vergano later won the 2006 David Perlman Award for Excellence in Journalism from the American Geophysical Union, signifying the importance of shifting science-media-policy interactions at that time.

⁴ For writing this book, while a work of fiction, Crichton was awarded the 2006 American Association of Petroleum Geologists journalism award.