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**Science (and Policy) Friction: How mass media shapes North
American climate discourses**

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Introduction

“For the sake of our children and our future, we must do more to combat climate change”
~ US President Barack Obama, State of the Union Address, 12 February 2013

In his 2013 ‘State of the Union’ (SOTU) address, United States (US) President Barack Obama took up strong rhetoric on climate change. And media outlets – spurred on by key pundits, journalists and editors – took note. As some examples, Darren Goode at *Politico* wrote that Obama’s statements were “strong enough call(s) to action to appease most climate advocates, even those who had said in the days leading up to the speech that they wanted Obama to lay out a detailed plan of attack” (2013). Stephen Stromberg from *The Washington Post* commented, “President Obama began his State of the Union address Tuesday night by threatening Congress. And, on global warming, that’s a good thing” (2013). And Michael Cohen at *the Guardian* posited that Obama’s bold rhetoric marked an “important step forward that (was) long overdue” (2013). As Obama began his second term in the most powerful office on planet Earth, by way of media reactions to the speech, an onlooking public citizenry saw ‘hope’ for more comprehensive climate change engagement rise again.

Indeed, all of this stands in stark contrast to his previous SOTU addresses, where he rarely uttered the word ‘climate change’. Far from trivial, this discursive absence from previous speeches was seen to have numerous implications: by not confronting climate issues explicitly, it was argued that opportunities for further scientific research and policy action were severely limited (Boykoff 2012). The discursive silence from the Obama Administration on climate change was thought to also have put a damper on international climate negotiations as well as science-policy cooperation on this high-stakes 21st century issue. Yet, there remain many open questions regarding how President Obama may or may not square this new rhetoric with ongoing policy deliberations regarding symbolically- and materially-critical climate-related issues in his second term, like approval of the Keystone XL pipeline, offshore drilling, a tax on carbon emissions, subsidization of carbon-based fuel extraction, and decision-making on oil and gas leases for hydraulic fracturing (or ‘fracking’). Put into (popular) cultural context through the words of musician Ben Harper, “there are good deeds and there are good intentions. They’re as far apart as heaven and hell”.

Over the past decades, the dynamics of North American science and politics have clearly shaped media coverage of climate change. Yet, it is also worth noting and considering how media representations have shaped ongoing scientific and political considerations, decisions and activities. In other words, it is instructive to consider how mass media have influenced who has a say and how in the public arena. By exploring some of the key processes involved in these interactions – in the context of North American science, policy and public arenas – we seek to contribute to wider considerations in this volume.

The media in North America (and around the world) are constituted by many institutions, processes and practices that together serve as ‘mediating’ forces between communities such as science, policy and civil society. Media segments, articles, clips and pieces represent critical links between people’s everyday realities and experiences, and the ways in which these are discussed at a distance between science, policy and public actors. People throughout

society rely upon media representations to help interpret and make sense of the many complexities relating to climate science and governance. Furthermore, media messages are critical inputs to what becomes public discourse on current climate challenges.

These spaces are what many now refer to as the ‘cultural politics of climate change’: dynamic and contested spaces where various ‘actors’ battle to shape public understanding and engagement (e.g. Boykoff and Goodman 2009). These are places where formal climate science, policy and politics operate at multiple scales, and are dynamic as well as contested processes that shape how meaning is constructed and negotiated. In these spaces of the ‘everyday’, cultural politics involve not only the discourses that gain traction in wider discourses, but also those that are absent (Derrida 1978). Like the Obama SOTU example that begins this chapter, contemplating other climate considerations in this way helps to examine “how social and political framings are woven into both the formulation of scientific explanations of environmental problems, and the solutions proposed to reduce them” (Forsyth 2003, 1).

Fossils & Freedom: Influential claims-makers in the public arena

The cultural politics of climate change reside in many spaces and places, from workplaces to pubs and kitchen tables. ‘Actors’ on this stage range from fellow citizens to climate scientists as well as business industry interests and ENGO activists. Over time, individuals, collectives, organizations, coalitions and interest groups have sought to access the power of mass media to influence architectures and processes of climate science, governance and public understanding through various media ‘frames’ and ‘claims’.

Questions regarding ‘who speaks for the climate’ involve considerations of how various perspectives – from climate scientists to business industry interest and ENGO activists – influence public discussions on climate change (Boykoff 2011). ‘Actors’, ‘agents’, or ‘operatives’ in this theatre are ultimately all members of a collective public citizenry. However, differential access to media outlets is a product of differences in power, and power saturates social, political, economic and institutional conditions undergirding mass media content production (Wynne, 2008).

In the highly-contested North American milieu of climate science and governance (see other contributions in this volume for more), different actors have sought to access and utilize mass media sources in order to shape perceptions on various climate issues contingent on their perspectives and interests (Nisbet and Mooney, 2007). For example, ‘contrarians’, ‘skeptics’, or ‘denialists’ have had significant discursive traction in North American public sphere over time (Leiserowitz et al 2013), particularly by way of media representations (Boykoff 2013). Resistances to both diagnoses of the causes of climate change, and prognoses for international climate policy implementation, in the US more specifically, have been often associated with the political right: the Republican Party and more particularly a right-wing faction called the ‘Tea Party’ (Dunlap 2008). John Broder of *The New York Times* described this right-of-center US political party stance as an “article of faith”, and polling data have shown that “more than half of Tea Party supporters said that global warming would have no serious effect at any time in the future, while only 15 percent of other Americans share that view” (2010, A1).

The conservative vanguard that won and retained a Republican majority in the House of Representatives in the past two national election cycles of 2010 and 2012 have been comprised of many actors who have taken a skeptical stance on the connection between

greenhouse gas emissions and climate change. Journalist Ronald Brownstein in the *National Journal* commented that many “have declared the science either inconclusive or dead wrong, often in vitriolic terms” (2010). Moreover, despite the fact that carbon-based industry interests have exerted considerable influence over climate policy in both countries, associated scientists and policy actors who have questioned the significance of human contributions – often dubbed ‘climate contrarians’ – have been primarily housed in North American universities, think tanks and lobbying organizations (Dunlap 2013, McCright 2007).

US-based non-nation state organizations such as the ‘Heartland Institute’ have held numerous meetings to promote contrarian views on climate science and policy (Boykoff and Olson 2013; Hoffman 2011). In short, issues associated with ‘what is’ and ‘what to do’ about climate change have been a politically-divisive issue in North America. Through a number of intersecting norms and trends in North American media outlets (to be described further below), media representations have contributed significantly to the perception of the North American political sphere as a highly polarized one when taking up climate issues.

Contributions to climate storytelling

The complex and multi-faceted issue of climate change is an issue that cuts to the heart of humans’ relationship with the environment. The cultural politics of climate change are situated, power-laden, media-tinged and recursive in an ongoing battlefield of knowledge and interpretation (Boykoff et al 2009). Mass media link these varied spaces together, as powerful and important interpreters of climate science and policy, translating what can often be alienating, jargon-laden information for the broadly-construed public citizenry. Media workers and institutions powerfully shape and negotiate meaning, influencing how citizens make sense of and value the world.

In the high-profile North American context, journalists, producers and editors as well as scientists, policy makers and non-nation state actors must scrupulously and intently negotiate how climate is considered as a ‘problem’ or a ‘threat’. As part of this process, it has been demonstrated that media reports have often conflated the vast and varied terrain – from climate science to governance, from consensus to debate – as unified and universalized issues (Boykoff 2011). As a consequence, conflated representations can confuse rather than clarify: they can contribute to ongoing illusory, misleading and counterproductive debates within the public and policy communities on critical dimensions of the climate issue. To the extent that North American mass media fuse distinct facets into climate *gestalt* – by way of ‘claims’ as well as ‘claims makers’ – collective public discourses, as well as deliberations over alternatives for climate action, have been poorly served.

There are facets of climate science and policy where agreement has become strong and convergent agreement dominates. In other areas, meanwhile, contentious disagreement has garnered worthwhile debate and discussion. However, conflation of these diverse dimensions into one sweeping issue through media representations has contributed to confusion. Moreover, this has set a breeding ground for manipulation from outlier viewpoints to inadvertently or deliberately skew public discourse.

Regarding ‘claims makers’, efforts to make sense of complex climate science and governance through media representations involves decisions regarding what are ‘experts’ or ‘authorities’ who speak for climate. This is particularly challenging when covering climate change, where indicators of climate change may be difficult for most people to detect (Andreadis and Smith, 2007). Moreover, in the advent and increasingly widespread influence of new and social

media (along with fewer ‘gatekeepers’ in content generation), the identification of ‘expertise’ can be more, rather than less, challenging. The abilities to quickly conduct a Google search for information is in one sense very liberating; yet, in another sense, this unfiltered access to complex information also intensifies possibilities of short-circuiting peer review processes (and determinations by ‘experts’), and can thereby do an “end-run around established scientific norms” (McCright and Dunlap, 2003, 359). In other words, these developments have numerous and often-paradoxical reverberations through ongoing North American public discourses on climate change.

Media conflation of claims and claims makers has been wrapped up in inherent and general challenges of translation. Within language resides the power to effectively (mis)communicate. However, differences in language use between science, policy, media and civil society can unavoidably impede efforts to make climate change – or any other issue – meaningful in society. In this way, important research, effective arguments, and interesting insights can suffocate under a wet blanket of jargon. Andrew Weaver has noted, “For the average person, the scientific jargon emanating from [scientists’] mouths translates into gobbledygook” (2008, 29). Considered in this way, responsibilities for media conflation cannot be placed on journalists, producers and editors themselves. Instead, these can be partly attributed to long-standing differences between the ‘Two Cultures’ – sciences and humanities – first explained by CP Snow in the 1950s (1959), and further elaborated in recent years in the context of climate science-policy by scholars such as Mike Hulme (2008) as well as Matthew Nisbet and colleagues (2010).

While media interventions seek to enhance understanding of complex and dynamic human-environment interactions, vague and decontextualized reporting instead can enhance bewilderment. For examples, by collapsing distinctions from evidence-based science to policy opinions, and by overlooking places where there is convergent agreement or divergent views within expert communities, public understanding has suffered in North America (Boykoff 2013, Leiserowitz et al 2013). This can be resolved in part by placing climate science and policy issues effectively *in context*. Context helps sort out marginalized views from counter-claims worthy of consideration on various aspects of climate change. Without providing such context, it becomes more (rather than less) challenging for citizens and policy actors to make sense of these issues, influencing their everyday lives and livelihoods.

There are many reasons why North American media accounts have failed to provide greater nuance in these aspects of climate change. Among them, processes behind the building and challenging of dominant discourses take place simultaneously at multiple scales. Large-scale social, political and economic factors influence everyday individual journalistic decisions, such as how to focus or contextualize a story with quick time to deadline. These issues intersect with processes such as journalistic norms and values, to further shape news content. Moreover, path dependence through histories of professionalized journalism, journalistic norms and values as well as power relations have shaped the production of news stories (Starr, 2004). These dynamic and multi-scale influences are interrelated and difficult to disentangle: media portrayals of climate change are infused with cultural, social, environmental and political economic elements, as well as how media professionals must mindfully navigate through hazardous terrain in order to fairly and accurately represent various dimensions of climate science and governance (Ward, 2008).

Overall, media representations are derived through complex and non-linear relationships between scientists, policy actors and the public that is often mediated by journalists’ news stories

(Carvalho and Burgess 2005). In this, multi-scalar processes of power shape how mass media depict climate change. Processes involve an inevitable series of choices to cover certain events within a larger current of dynamic activities, and provide mechanisms for privileging certain interpretations and 'ways of knowing' over others. Resulting images, texts and stories compete for attention and thus permeate interactions between science, policy, media and the public in varied ways. Furthermore, these interactions spill back onto ongoing media representations. Through these selection and feedback processes, mass media have given voice to climate itself by articulating aspects of the phenomenon in particular ways, via claims makers or authorized speakers. In other words, through the web of contextual and dynamic factors, the stream of events in our shared lives gets converted into finite news stories. Thus, constructions of meaning and discourse on climate change are derived through combined structural and agential components that are represented through mass media to the general public.

The growth of North American media coverage of climate change

While, the critical issue of 'climate change' emerged significantly in the North American public sphere in the late 1980s, the roots of media treatment of climate change run much deeper. The sprouts of climate coverage have surfaced alongside the birth and growth of modern media communications over the past century. Through the propagation of information via numerous channels and outlets, circulation and readership of various media publications in North America flourished (Starr, 2004). Along with these developments came idealized journalistic standards of accuracy, accountability, independence, balance and checks on profit (Jones, 2009).

However, corporate concentration, conglomeration and commercialization of mass media in the early 1900s carried conflicting impulses of expanding democratic speech and corporate capitalist pursuits of profit (Graber, 2000; Doyle, 2002). Many mass media organs transformed into large-scale commercialized news apparatus, and power of mass media became both amplified and more entrenched in society (McChesney, 1999).

Over this period of time, mass media coverage shifted from predominant attention paid to weather, food and climate to numerous articles that sought to describe the significance of this scientific research for society. For example, a *Chicago Tribune* article in 1913 endeavoured to explain the significance of the research of Svante Arrhenius. A passage read:

Svante Arrhenius, a Swedish Scientist has contributed much to the theory of the beginning and ending of the world. According to him, the sun is dissipating and wasting inconceivable amounts of heat every year, and while its enormous energy may endure this loss for ages, the time must come when the sun will cool down and cover itself with a solid crust as our earth has done, and as the other planets have or will do some day. But no human being, he says, will be able to watch this death of the sun, for in spite of all man's desperate struggles and infinite inventions, all life will long have ceased on the earth for want of heat and life. Nor if people exist on any of the other wandering satellites of the sun will they be able to note its extinction, for they too will have failed to survive. But the end of the world by this means is far, far distant...

While still scant, relative to the quantity of contemporary coverage of climate change, the spheres of climate science and mass media further came together in the 1930s. In 1932, *The New York Times* staff wrote, "The earth must be inevitably changing its aspect and its climate. How the change is slowly taking place and what the result will be has been considered..." (1932) Media coverage of early anthropogenic climate science began to appear as early as the 1950s. For instance, journalist Waldemar Kaempffert wrote in *The New York Times* (1956):

Today more carbon dioxide is being generated by man's technological processes than by volcanoes, geysers and hot springs. Every century man is increasing the carbon dioxide content of the atmosphere by 30 percent – that is, at the rate of 1.1°C in a century. It may be a chance coincidence that the average temperature of the world since 1900 has risen by about this rate. But the possibility that man had a hand in the rise cannot be ignored.

In the subsequent three decades, North American media coverage of climate change remained sparse, where climate science reports and meetings in the 1960s and 1970s, such as the NCAR-hosted conference 'Causes of Climate Change' in 1965, only generated occasional pieces. Yet, events over this time period (such as the first Earth Day in 1970) prompted ongoing considerations of interactions as the human-environment interface, while the global oil shocks in the 1970s began to draw attention to questions of energy security and the environment. During this time, scientific conferences exploring climate themes also increased. Bookending this decade, Stockholm was the site of a 1971 conference entitled 'Study of Man's Impact on Climate', and in 1979 the World Meteorological Organization (WMO) organized the first 'World Climate Conference' in Geneva Switzerland (Fleming, 1998).

Then the early 1980s began to see some increased coverage of climate science, focusing mainly on prominent and charismatic scientists such as NASA's James Hansen and then-NCAR's Stephen Schneider. For example, a front page story at *The New York Times* in 1981 featured Hansen's *Science* study showing an increase in global mean temperatures along with a concurrent increase in atmospheric CO₂ emissions (Mazur and Lee, 1993). Furthermore, in 1985, the Villach Conference convened in Austria to examine impacts of greenhouse gas emissions on the planet. Concurrently, academic research began to interrogate how media representations have fed back into ongoing formulations and considerations of environmental problems, issues and themes.

But it was in 1988 when climate science and governance flowed into full public view – by way of these numerous historical tributaries – through large-scale media attention (Carvalho and Burgess 2005). Then, media coverage of climate change and global warming increased substantially in Western Europe and North America (Weingart et al, 2000). Many factors contributed to this rise, and these can be further understood through the primary type or effect of each contribution.

First, there were *ecological/meteorological* events in the form of a North American heat wave and drought in the summer of 1988, as well as attention-grabbing forest fires in parts of Yellowstone National Park. These concomitant events were thought to sensitize many in the climate science and policy communities, as well as the media and public, to the issue of climate change. Demeritt has posited, "The 1988 heat wave and drought in North America were arguably as influential in fostering public concern as any of the more formal scientific advice" (2001, 307).

Second, there were *political* issues that were emergent. For instance, Prime Minister Margaret Thatcher spoke to the Royal Society in what became known as her 'green speech' on the dangers of climate change. In a rare address of the issue, she offered a warning regarding potential impacts due to climate change. She asserted, "We may have unwittingly begun a massive experiment with the system of the planet itself" (Leggett 2001, 10). Also, across the Atlantic Ocean, NASA scientist James Hansen forcefully warned Congress that global warming was a reality. He said on the Senate floor that he was "99 percent certain" that warmer temperatures were caused by the burning of fossil fuels and that they were not

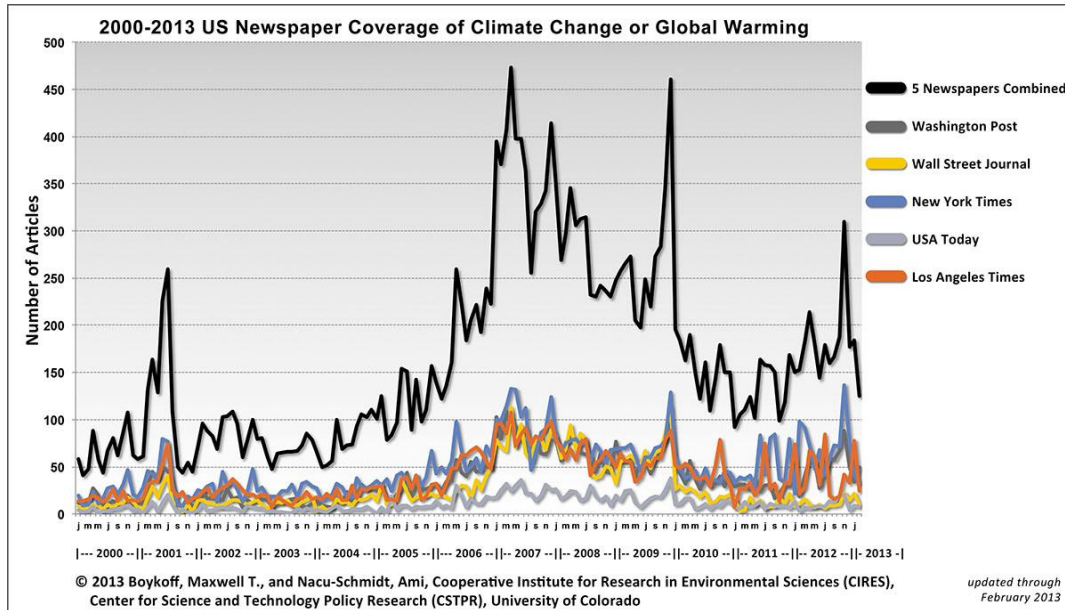
solely a result of natural variation (Weisskopf, 1988). He also asserted that “it is time to stop waffling so much and say that the evidence is pretty strong that the greenhouse effect is here” (Shabecoff, 1988, A1), while his testimony was offered on one of the hottest days of the year in North America. In the US, the impending presidential election also played a part, as campaign rhetoric became tinged with mentions of climate change and global warming. On the campaign trail that year, then-candidate George H.W. Bush acknowledged the seriousness of global warming, and promised the administration would substantively address the issue. These political events garnered front page coverage in *The Washington Post* and *The New York Times* among publications at that time.

Third, *scientific* stories shaped media representational practices. Prominently, 1988 was the year in which the United Nations Environment Program and the World Meteorological Organization created the IPCC in Geneva, Switzerland. Also, the WMO held an international conference called ‘Our Changing Atmosphere’ in Toronto, Canada where (Pearce, 1989). At this conference, 300 scientists and policy-makers representing 46 countries convened, and from this meeting, participants called upon countries to reduce carbon dioxide emissions by 20 percent or more by 2005 (Gupta, 2001).

Together, ecological, political and scientific factors intersected, and dynamically brought the issue of climate change clearly onto the public arena (Wynne, 1994; Irwin and Wynne, 1996). At that time, narratives conformed to journalistic norms and informational predilections of the newspaper and television news media. According to Sheldon Ungar, “What rendered 1988 so extraordinary was *concatenating* physical impacts *felt* by the person in the street” (1992, 490).

Figures 1 and 2 appraise the trends in media coverage of climate change from 2000 into 2013 in newspapers in both the US and in Canada. More generally, stories tracking issues, events and information on ‘environmental issues’ (of which climate change is a subset) have continued to occupy a small nook in news overall. In other words, relative to other issues like health, medicine, business, crime and government, media attention to climate change remains a mere blip (Project for Improved Environmental Coverage 2013).

Figure 1: US Newspaper Coverage of Climate Change/Global Warming



Caption: This figure tracks newspaper coverage of climate change or global warming in five newspapers in the United States from January 2000 – February 2013). These newspapers are the *Los Angeles Times*, *The New York Times*, *USA Today*, the *Wall Street Journal*, and *The Washington Post*. For monthly updates go to http://sciencepolicy.colorado.edu/media_coverage/

many efforts undertaken to understand the ‘public mood’. Despite its limits, the most readily accessible way to put one’s proverbial finger on the pulse of public sentiment has been through polling data. However, explanatory power derived from polling data can be problematic and potentially tricky to handle.

Questions regarding public acceptability of various policy tools such as Cap and Trade or carbon taxation can provide helpful insights into questions of feasibility and latent public pressure. For example, the *Six Americas* studies conducted by Ed Maibach, Connie Roser-Renouf, Anthony Leiserowitz and colleague have sought to provide greater texture regarding US public views on numerous climate policy measures and personal actions. Through public polling since 2005, they have found six distinct groupings of citizens in the US regarding their views and perceptions of the costs and benefits of reducing fossil fuel consumption and ameliorating the negative impacts of climate change. Moreover, this work assesses varied support for different national climate and energy policies, and appraises the differing beliefs about efficacy of climate policy decision-making. These ‘Six Americas’ are described as ‘alarmed’, ‘concerned’, ‘cautious’, ‘disengaged’, ‘doubtful’ and ‘dismissive’. This work has provided useful and important insights into how more textured considerations of US perspectives facilitate more tailored and effective messaging on climate and energy issues. Furthermore, these approaches help to more capably consider how issues such as how religion, ideology and gender permeate support for climate action, as well as related issues such as energy efficiency improvement measures (2009).

Yet, pitfalls arise when science-based evidentiary questions are put on the same platform. In other words, it is fundamentally problematic when pollsters reduce expert based science questions to the same domain as *vox populi* opinions or beliefs. For example, a February 2010 *BBC/Populus* poll posed the question, “From what you know and have heard, do you think that the Earth’s climate is changing and global warming is taking place?” Such a question invites opinion through a range of ways, from whether a respondent may wish it was not taking place to whether someone on the street or in mass media told them that it was not happening. Such a way of approaching the issue then privileges opinion at the expense of valuing relevant expert research and authority.

In the context of newsroom cuts and shrinking funds for investigative journalism, anecdotal observations have noted an increase in the percentage of stories on climate change devoted to polling data. Poll results readily make for an appealing news hook into making sense of public views and sentiments in the complex issues associated with climate change and require little investigative work to assemble. Polls can indeed provide utility in terms of gauging possible public support for various policy actions on climate change. Yet, along with these trends come risks of reducing issues of expert-based scientific understanding to that of mere opinion. More to the point, however, polling agencies exhibit recklessness through such approaches, particularly when understaffed news agencies pick up their findings at face value in order to file a story on an ever-tightening deadline. While getting their latest polls picked up in the press may translate to commercial success, this carries the risk of giving potentially mistaken impressions public sentiments, in North America and elsewhere. Overall, as John Wihbey has put it, “Public opinion polls and surveys are attention getters, headline grabbers. Reporters and editors love them. Sometimes they should learn to hate them...or at least to approach each one with a healthy dose of skepticism” (2009).

Conclusions

The road from information acquisition via mass media to various forms of engagement and action is far from straightforward, and is filled with turns, potholes and intersections. This is a complex arena: mass media portrayals simply do not *simply* translate truths or truth-claims nor do they fill knowledge gaps for citizens and policy actors to make ‘the right choices’. Moreover, media representations clearly do not dictate particular behavioural responses. For example, research has shown that fear-inducing and catastrophic tones in climate change stories can inspire feelings of paralysis through powerlessness and disbelief rather than motivation and engagement. In addition, O’Neill et al have found that imagery connected with climate change influences saliency (that climate change is important) and efficacy (that one can do something about climate change) in complex ways amidst the US public (2012). Among their results, they found that imagery of climate impacts promoted feelings of salience, but undermined self-efficacy, while imagery of energy futures imagery promoted efficacy. Overall, media portrayals continue to influence – in non-linear and dynamic ways – individual to community- and international-level perceptions of climate science and governance (Wilby, 2008). In other words, mass media have constituted key interventions in shaping the variegated, politicized terrain within which people perceive, understand and engage with climate science and policy (Krosnick et al. 2006, Goodman and Boyd 2011).

Moreover, mass media comprise a community where climate science, policy and politics can readily be addressed, analyzed and discussed. The way that these issues are covered in media can have far-reaching consequences in terms of ongoing climate scientific inquiry as well as policy maker and public perceptions, understanding and potential engagement. In this contemporary environment, numerous ‘actors’ compete in these media landscapes to influence decision-making and policy prioritization at many scales of governance. Multitudinous ways of knowing – both challenged and supported through media depictions – shape ongoing discourses and imaginaries, circulating in various cultural and political contexts and scales. Furthermore, varying media representational practices contribute – amid a complex web of factors – to divergent perceptions, priorities and behaviours.

More media coverage of climate change – even supremely fair and accurate portrayals – is not a panacea. In fact, increased media attention to the issue often unearths more questions to be answered and *greater* scientific understanding actually can contribute to a *greater* supply of knowledge from which to develop and argue varying interpretations of that science (Sarewitz 2004). At best, media reporting helps address, analyse and discuss the issues, *but not answer them*. And dynamic interactions of multiple scales and dimensions of power critically contribute to how climate change is portrayed in North American media. As we have detailed above, mass media representations arise through large-scale (or *macro*) relations, such as decision-making in a capitalist or state-controlled political economy and individual-level (or *micro*) processes such as everyday journalistic practices as well as now the use of polling data. This contribution seeks to help readers of this volume work through some of the key cultural dimensions of climate change in the North American context. Through this contribution, we have sought to lay some groundwork down for readers to then pursue these issues in more detail, as contexts and conditions change going forward into this, the 21st ‘climate changed’ century.

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