

A Change in the Weather

Fact, Fiction, and Metaphor in the Discourse of Climate and Weather Extremes

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Abstract

Media representations have vast potential to catalyze social change. However, popular media representations of controversial issues are volatile, and can take on a life of their own. Insofar as we are concerned about global climate change, we should also be concerned with how climate change is represented, how the story unfolds. This thesis is an attempt to gain perspective on one particular story, of extreme weather as caused by climate change. I argue that climate change has been increasingly associated with extreme weather events. While this may increase saliency of climate change or feelings of urgency around climate action, I problematize this strategy, arguing that it has other less clear or intended effects, which may help to reinforce rather than deconstruct ways of thinking that detract from long-term goals for climate change mitigation and adaptation. In particular, this discourse potentially perpetuates asymmetric power relations between Global North and South through the rhetoric of vulnerability, promotes unreflective engagement with climate issues, urging pragmatic action when the grounds for such action remain unstable, and fails to contribute to creative approaches to risk and uncertainty.

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Guide to Commonly Used Acronyms

UNFCCC	United Nations Framework Convention on Climate Change Originally convened in 1994 with the goal of preventing ‘dangerous human interference with the climate system, the UNFCCC is one of three conventions adopted at the Rio Earth Summit in 1992, and is participated in by almost every country in the world.
COP	Conference of the Parties An annual conference of UNFCCC participants. The most recent was the COP19 in Copenhagen in November 2013
IPCC	Intergovernmental Panel on Climate Change The IPCC was established in 1988 through the United Nations Environment Programme and the World Meteorological Organization.
AR5 and AR4	IPCC Fifth Assessment Report and IPCC Fourth Assessment Report Every seven years the IPCC prepares an extensive report on physical science impacts on humans, and adaptation strategies related to climate change. The most recent full report was released in March 2014. The First, Second, and Third Reports are typically abbreviated FAR, SAR, and TAR respectively.
SREX	Refers to the IPCC report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation (SREX), released in 2012
GCM	General Circulation Model GCMs are mathematical models of the atmosphere and/or ocean. Global climate models make use of coupled oceanic-atmospheric GCMs as well as other information about the climate system.

No sooner is a form seen, then it *must* resemble something. Humanity seems doomed to analogy.

~ Roland Barthes

Introduction

Pink slime. If you were around the United States in 2012, you probably heard the phrase or saw the pictures, the most of famous of which shows coils of what could be cotton candy in a cardboard box. It's not cotton candy. It's a hamburger, or at least what used to be a prevalent ingredient in them.

'Pink slime' is another name for what the meat industry calls 'lean finely textured beef' (LFTB) or 'boneless lean beef trimmings' (BLBT).¹ The product, a filler used to increase the protein content of ground beef, is made up of scraps and trimmings treated to remove the fat content. While the term was coined several years prior, its first public use as a pejorative came in a 2009 investigative piece in the *New York Times*, which questioned the safety of treating the product with ammonia to reduce contaminants like *E. coli*.² Another *New York Times* piece in 2010 reiterated the same concerns, but it was not until 2012 when an ABC news story claimed that 70% of ground beef sold in the U.S. contains 'pink slime' that the controversy came to widespread public attention.³ Consumer outcry surrounding the prevalence of 'pink slime' resulted in widespread action by fast food restaurants, food retailers, and public school districts, most of which discontinued sales of beef containing the product, and is credited with causing the closure of several beef processing plants.⁴ In some areas, aversion to industrially produced ground beef was connected to increased profit for local butcher shops and grocery stores who grind their beef on site, without additives, many of whom proudly advertised this fact during the controversy.

After the heat died around public health, nutrition, and institutional transparency, a new issue cropped up; the issue of the reporting itself. Was 'pink slime' really all that bad or was this just another instance of media fearmongering? The company, Beef Products, Inc., shut down multiple factories in the

¹ Hagen, Elisabeth. "Setting the Record Straight on Beef", USDA blog, March 22, 2012

² Moss, Michael. "Safety of Beef Processing Method Is Questioned." *The New York Times*, December 31, 2009, sec. US. <http://www.nytimes.com/2009/12/31/us/31meat.html>.

³ "70 Percent of Ground Beef at Supermarkets Contains 'Pink Slime.'" *ABC News Blogs*. Accessed March 20, 2014. <http://abcnews.go.com/blogs/headlines/2012/03/70-percent-of-ground-beef-at-supermarkets-contains-pink-slime/>.

⁴ Hsu, Tiffany. "'Pink Slime's' Beef Products Inc.: Hard Knock for a Good Company?," *Los Angeles Times*, March 26, 2012. and Andrews, James. "Will BPI's Plant Closures Affect America's Ground Beef?," *Food Safety News*, accessed February 11, 2014, <http://www.foodsafetynews.com/2012/03/how-will-bpis-plant-closures-affect-americas-beef/>.

wake of the controversy, many jobs were lost, and wait . . . wasn't 'pink slime' just beef anyway?⁵ Yes, LFTB/BLBT is made from 100% beef.⁶ In fact, one of its early selling points that it was believed to lessen risk of *E. coli* contamination, making ground beef safer.⁷ Maybe it was just media hype after all ...

At the peak of attention to this issue the term 'pink slime' and the images associated with it took on significance far beyond what they explicitly denote. 'Pink slime,' in word and image, came to signify, most immediately, flaws in the American food system, but had potentially infinite other connotations depending on to what you attribute those flaws. Government corruption, industrialization, and capitalism are a few options. But why? 'Pink slime' lurked in Happy Meals and on the shelves of grocery stores for decades before being widely perceived as a problem. So why did it receive the attention that it did when it did? One key factor, among many others, is media representation. News media, the press, acted as a vector, the agent through which 'pink slime' came to briefly and violently infect public imagination, catalyzing a chain of social, political, and economic reactions. Not just the presence of media attention, but the successful branding of the issue, resulted in its dissemination into and replication by other media avenues and, eventually, popular culture more generally. 'Pink slime,' is catchy, and, in context, it's vaguely disgusting. It doesn't sound like something you should eat.

⁵ Hsu, "Pink Slime's' Beef Products Inc."

⁶ Andrews, "Will BPI's Plant Closures Affect America's Ground Beef?"

⁷ Hsu, "Pink Slime's' Beef Products Inc."; Andrews, "Will BPI's Plant Closures Affect America's Ground Beef?"



‘Pink slime’ is just one of many examples of how public attention is captivated by signs and symbols. When an image or phrase is reproduced over and over in the context of a certain issue or item of public interest it can come to represent that issue. In short, it becomes a sign, a representation of something other than what it immediately or intuitively is. And this sign doesn’t necessarily have to be accurate to be effective. For example, the image above, used by MSNBC and other news sources comes up easily in a Google Image Search for ‘pink slime.’ However, in a related scandal this image was also used in criticisms of the preparation of McDonald’s chicken nuggets.⁸ In this context it was called ‘pink goop.’⁹ ‘Pink slime’ denotes more than just beef, as does the image above. They evoke an entire story. The process by which words, images, or objects come to signify what they do in a particular linguistic community is sometimes called sign-creation, and is considered a type of sense-making.¹⁰ An analog in the business world would be branding. One’s brand, ‘who you are,’ is signified by your logo, the symbol of that brand.

⁸Brad Tuttle, “McDonald’s Made the Right Move in Response to Gross ‘Pink Slime,’” *TIME.com*, accessed May 7, 2014, <http://time.com/4680/mcdonalds-made-the-right-move-in-response-to-gross-pink-slime/>. and *Pink Goop in Chicken McNuggets? McDonald’s Canada Answers*, 2014, http://www.youtube.com/watch?v=Ua5PaSqKD6k&feature=youtube_gdata_player.

⁹ Ibid

¹⁰ Castree “Making Sense of Nature”

Climate change seems to be in need of branding. While climate change is becoming an object of public concern, in the United States at least, it remains low on the list of priorities and is not perceived as a serious threat.¹¹ At the policy level, cooperation has been difficult to achieve, particularly at the international level and within the United States specifically.¹² One theory of why this is so is that climate change is a ‘perfect moral storm,’ combining global and intergenerational ethics.¹³ Because the effects of climate change are perceived as distant, both spatially and temporally, there is little incentive to take action now. If this is the case, then if the effects of climate change were perceived as immediate, right here and right now, there would be more incentive to take action. In the case of pink slime, the term ‘pink slime’ and the image depicted above came to serve as the catalyst for this change in perception, a symbol of the issue. This symbol was largely constructed by the press, but was adopted and reproduced throughout the public imagination. Climate change needs its symbol.

Extreme weather events, like hurricanes, heavy precipitation and associated flooding, or droughts, heat waves, associated wildfires, which are expected to increase in frequency over the next century are potential symbolic loci for more ‘effective’ framing of climate change as an issue.¹⁴ The connection between these events and climate change is beginning to receive some media attention, and some claim that the unusual number of extreme weather events in the last few years are contributing to a shift in consciousness around the issue.¹⁵ ¹⁶ ‘Extreme weather’ might just be the ‘pink slime’ that climate change needs.

In this thesis I focus on the connection between climate change and extreme weather in the public imagination. Given the role of verbal and visual metaphors in generating public discourse around particular issues through media attention, attributing extreme events to anthropogenic warming is an attractive option for those who seek to frame climate change as an urgent threat. Audio-visual,

¹¹ As suggested by Gallup’s March 6-9, 2014 survey

¹² While some municipal and regional policies have been developed they are few and far between, and comprehensive national or international policy action has typically been met with resistance.

¹³ Stephen M. Gardiner, “A Perfect Moral Storm: Climate Change, Intergenerational Ethics and the Problem of Moral Corruption,” *Environmental Values* 15, no. 3 (August 1, 2006): 397–413.

¹⁴ IPCC, 2012: Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation. A Special Report of Working Groups I and II of the Intergovernmental Panel on Climate Change [Field, C.B., V. Barros, T.F. Stocker, D. Qin, D.J. Dokken, K.L. Ebi, M.D. Mastrandrea, K.J. Mach, G.-K. Plattner, S.K. Allen, M. Tignor, and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, UK, and New York, NY, USA, 582 pp.

¹⁵ Ira Glass, *Hot In My Backyard*, This American Life, accessed January 29, 2014, <http://www.thisamericanlife.org/radio-archives/episode/495/hot-in-my-backyard>.

¹⁶ Christiana Figueres

photographic, and print media, from ostensible ‘fact’ to acknowledged fiction, are all potential sources of exposure to this framing strategy. Using content analysis, I first track the extent to which climate change is linked to extreme events in popular media channels from the 2007 to the present. This demonstrates an observable short-term trend of increasing association between climate change and extreme weather. Then, using discourse analysis, I interrogate current narrative and rhetorical devices employed in the making of this connection and their possible implications for public understanding of climate change risk and vulnerability. Finally, I offer some relevant considerations for evaluating the merit of different strategies for climate change communication. I do not deny that there may be immediate benefits to framing climate change in the context of weather extremes. However, I argue that this frame ignores the many disparities at the root of climate change and can even be used to perpetuate those disparities. By leaving underlying power relations untouched, this narrative can (re)produce present forms of representational and material marginalization. Therefore, despite its potential benefits, this tactic may actually be in conflict with longer-term or more holistic goals that we may have in relation to global human systems to adapt to a changing climate. Greater debate is needed to establish mechanisms for weighting various, sometimes opposing, objectives so that we may chart a more coherent course for our collective future.

Background

Media(tion) and the Construction of Knowledge:

Some have claimed that the media “are like the air, ever present yet rarely considered.”¹⁷ For those who have considered them, social constructions of reality through mass media have provided rich areas of study and, for some, cause for alarm.¹⁸ I do not here question the saturation of everyday life with various media representations. Rather, I take it as my starting point, tracing one particular representation, the association of climate change with extreme weather, as it establishes itself in public discourse. Here, I will briefly review some of the literature on media representation with reference to implications of media representations for environmental change. Of the many forms of media, most of the scholarship I presented here is focused on that of the journalistic variety. However, advertising, entertainment, and new/social media are all constitutive of the dynamics through which knowledge is negotiated, and the representation of climate change in any area of media has implications for public discourse.

Broadly speaking, media serve as channels through which issues are made explicit in the public arena.¹⁹ This is done by framing, or branding, the issue as a problem through the use of verbal and visual signifiers, of which ‘pink slime’ is one.²⁰ Words and images, which already have a meaning attached to them, can be appropriated through media and given new or modified significance in the context of the issue at hand.²¹ These representations can be catalysts for change or instruments of normalization.

This tension emerges in the context of the environment as well. By recognizing, defining, and legitimizing certain environmental issues, and not others, media are one architect of the knowledge infrastructure that characterizes environmental discourse in particular communities from the local to the global.²² The press, for example, has long served to drive attention to and away from various

¹⁷ David Croteau, *Media/society : Industries, Images, and Audiences*, 4th ed.. (Thousand Oaks, Calif: SAGE, 2012). 3.; Noel Castree, *Making Sense of Nature: Representation, Politics, and Democracy* (London; New York: Routledge, 2014).

¹⁸ David Croteau, *Media/society*; Norman Fairclough, *Media Discourse* (London; New York: Bloomsbury Academic, 2009); Dorian Wiszniewski and Richard Coyne, “‘Mask and Identity: The Hermeneutics of Self-Construction in the Information Age’,” in *Building Virtual Communities*, 1st ed. (Cambridge University Press, 2009), 191–214.

¹⁹ S. Hilgartner and C. L. Bosk, “The Rise and Fall of Social Problems : A Public Arenas Model,” *American Journal of Sociology* 94, no. 1 (1988): 53–78.; Castree, *Making Sense of Nature*.

²⁰ Hilgartner and Bosk, “The Rise and Fall of Social Problems.”; Arthur Asa Berger, *The Objects of Affection : Semiotics and Consumer Culture*, 1st ed.. (New York: Palgrave Macmillan, 2010).

²¹ Berger, *The Objects of Affection*.

²² Castree, *Making Sense of Nature*.

environmental issues. The last Great Auks were killed off the coast of Iceland in 1844 with almost no one the wiser, but the potential danger posed to Spotted Owl populations by logging in the Northwest was a discussion of national proportions, which some have attributed to differences in media coverage.²³ In journalism, environmental coverage is often highly event driven, centering on major lawsuits, political campaigns, and public scandals.²⁴ A consequence of this is that issues that are not ‘in the spirit of the times,’ so to speak, may easily fall by the wayside and be left out of popular representations. However, as noted above, the formal press is not the only form of media relevant to this discussion.

Technological change and the rise of new media have also popular environmental discourse. The rise of bloggers, for example, has added a new dimension to information exchange. Often writing in an opinionated, personal tone, bloggers are able to be snarky and culturally aware, slinging sarcasm, pop culture references, and memes with ease. In this field, writers don’t have to care about neutrality. Social media like Twitter, Tumblr, Instagram and Facebook are also part of this new media development. The prevalence of the #hashtag, allows people to instantly connect their ideas with those of others around the world through linking to a shared topic. These shifts in communication technology allow for more rapid dissemination of information than ever before and create opportunities to increase transparency and engage the public in decision-making. This potential of communication infrastructure extends beyond socio-environmental issues to the construction of global knowledge more generally. However, there are also little-understood consequences to this emerging connectivity.²⁵ It will no doubt be interesting to witness these developments unfold. For our purposes here however, the increased speed and ease of communication provided by ‘new media’ coupled with the longstanding influence of media on public perception, provide ample reason to further investigate the implications of media representations of climate change. Bolstered with this brief introduction, we can now move to discuss popular representations of climate change.

A Hot Topic: Climate Change in Public Discourse

A recurring element in popular representations of climate change in the media is the ‘climate

²³ Mark Neuzil, *The Environment and the Press : From Adventure Writing to Advocacy* (Evanston, Ill: Northwestern University Press, 2008).

²⁴ Ibid

²⁵ Jose van Dijck, *The Culture of Connectivity : A Critical History of Social Media* (Oxford ; New York: Oxford University Press, 2013).

change debate.’ A grasp of this debate yields conceptual tools that are indispensable to later parts of my analysis, plus, it would be remiss in a thesis on climate change to brush this conversation aside. Exploring this debate raises interesting questions of both scientific and journalistic objectivity. While I cannot offer an extensive treatment of these issues here, I attempt to offer a concise introduction to the discursive climate in which these public debates occur. My point here is not to support either the contrarian or consensus position, but to contextualize popular climate discourse by reference to one of its major constituents.

The perpetuation of apparent debate over the facts of climate is a topic of scholarly interest. For example, Naomi Oreskes, who has published extensively in the history and philosophy of climate science has focused on the manufacturing of this debate by conservative organizations.²⁶ Her and Erik Conway’s book *Merchants of Doubt*, charts the history of these organizations, demonstrating that a relatively small group of key scientists has been involved in producing the appearance of scientific disagreement where there was none for the better part of a century. Additionally, geographer Maxwell Boykoff has suggested that in the United States journalistic norms contributed to news outlets over-representing the extent of debate on climate change, while countries operating under different journalistic norms did not experience this phenomenon.²⁷ However, he also suggests that recently news articles on climate change in the United States have tended to favor the consensus position, indicating that norms of reporting may be shifting.

Insofar as the ‘climate change debate,’ persists today, it is not a debate about whether or not anthropogenic carbon dioxide emissions are influencing global average temperatures. Rather, the debate focuses on ‘tempo and mode,’ meaning the projected speed and direction of changes to the climate system, as well as the severity of their impacts on humans.²⁸ I use the term ‘climate skeptic,’ ‘climate denier,’ or ‘contrarian’ to refer to those who deny that climate change poses serious danger to humans. Contrarians diverge from the dominant scientific consensus on how much the climate is likely to warm, what associated meteorological changes will occur, and the extent of the danger they pose to humans as

²⁶ Naomi Oreskes and Erik M. Conway, *Merchants of Doubt : How a Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Global Warming*, 1st U.S. ed.. (New York: Bloomsbury Press, 2010).

²⁷ Maxwell T. Boykoff, *Who Speaks for the Climate?: Making Sense of Media Reporting on Climate Change* (Cambridge University Press, 2011).

²⁸ Naomi Oreskes, “The Scientific Consensus on Climate Change,” *Science* 306, no. 5702 (December 3, 2004): 1686–1686, doi:10.1126/science.1103618.

warming continues.²⁹ An estimate of the consensus view is represented in the IPCC's recently released 5th report. Skeptical criticisms of the consensus often characterize the IPCC as an alarmist pseudo-scientific organization, using inobjective methods to sensationalize climate change.

So, why might a skeptic doubt IPCC projections? There are three criticisms that figure prominently in skeptical literature. These are (1) the reliance of climate science on modeling, (2) the influence of environmental organizations, scientifically untrained climate alarmists, according to the skeptic, on the IPCC, and (3) lack of transparency of the actual methods and decision-making strategies of climate science. Taken together these criticisms inform a general skeptical argument that the assumptions built into models by climate scientists generate overly catastrophic global warming predictions that are used to promote a political agenda. Important scientific opinions deviating from the consensus view are then swept under the rug to further manufacture an alarmist consensus, as media scandals like "Climategate" and "Glaciergate" indicate.³⁰

The dependence of climate science on models is seen as problematic for a few reasons. A concern shared by skeptics and believers alike is that the slightest deviation in model construction is magnified many times over in predictions of future climatic conditions, which makes current knowledge of climatic processes a significant limitation on the accuracy of model predictions. Models also reflect the assumptions of the scientists who create them. Even if scientists strive to keep their personal views from bleeding over into their work, implicit biases could affect the way the model is made, leading to exaggerated predictions. The first concern is epistemological, dealing with what is known about climate, while the other is a methodological criticism of the behaviors of scientists. Because climate science is based on models, there is ample opportunity for manipulation (whether intentional or not) of model output. The models reflect the modeler, the subject, rather than real conditions. While this criticism deals with the subjective judgements of individuals, the concern I explore next is that the objectivity of climate science is threatened by political goals.

Both contrarian and consensus scientific organizations have been questioned on the basis of their

²⁹ If you are interested in climate skepticism, objectivescience.net is a good source of more informal writings as well as pieces pulled from news outlets. For a more scientific perspective, the Heartland Institute funded Nongovernmental International Panel on Climate Change (NIPCC) publishes regular reports challenging IPCC information which can be found at nipccreport.org

³⁰ For an informative discussion of the controversy over "Climategate" and "Glaciergate," in the context of social constructivism I recommend Castree, *Making Sense of Nature*.

political motivations. Investigations like those of Oreskes and Conway expose the long tradition of conservative political lobbies employing scientists to manufacture debate where debate had long since been resolved.³¹ Similarly, climate skeptics, noting that “laughably biased” environmental activist groups, such as World Wildlife Fund, Greenpeace and Environmental Defense fund, contribute to IPCC reports, claim that IPCC publications serve as a political instrument rather than a scientific report. If scientists are being funded by groups with particular political agendas, then there is a danger that both the data itself and the conclusions drawn from that data are being manipulated to further the agenda of the funding group.

A final challenge to the objectivity of climate science rests in the failure of climate scientists to clearly communicate their findings and defend their methods. Climate scientists have been accused of using manipulative language and intimidating rather than explaining when questioned about their claims. This has led some skeptics to believe that predictions about future warming and its associated dangers are unsubstantiated. Because the reasons for various conjectures by climate scientists are not always made clear, there is room for worry that those reasons might not be there. Rather than making claims on the basis of established best practices, climate scientists, protected by a veneer of expertise, could just be expressing uninformed opinions about what they think will happen.

The examples above describe three ways in which climate science is criticized by skeptics as unscientific, subjective, or biased. Taken together these examples inform the argument that the methodology and culture of the discipline facilitate manipulation of the facts in the interests of particular agendas. This flawed information is disseminated by the media to foster a culture of panic. Some have even called this alarmist framing ‘climate porn,’ to highlight that this sensationalization makes climate change more like a disaster movie than a real problem.³²

In laying out some relevant features of popular climate change discourse, I have focused on the skeptical criticism that IPCC projections exaggerate the consequences of global warming. This discussion may leave you wanting to know more about what predictions the IPCC does make. It is to these concerns that I turn in the next section.

³¹ Oreskes and Conway, *Merchants of Doubt*.

³² Richard Black, “Media Attacked for ‘Climate Porn,’” *BBC*, August 2, 2006, sec. Science/Nature, <http://news.bbc.co.uk/2/hi/science/nature/5236482.stm>.

The Science of Extreme Weather and Climate Change:

To evaluate the discourse of climate change and extreme weather, some scientific background will be necessary. In this section I review recent scientific information on the relationship between extreme weather and climate change and as well as theory underlying the prediction of future extremes and attribution of extreme events to climate change. In particular, I focus on sources of uncertainty that still remain and some of their implications for climate change adaptation.

Because it is used in a variety of ways, the meaning of the term ‘extreme’ can be ambiguous. Weather or climate extremes are sometimes described as rare events, particularly intense events, and/or high-impact events.³³ The IPCC considers the value of a weather or climate variable to be extreme if it lies above a threshold value near the upper end of the ever-observed value range, or below a threshold value near the lower end of that range. A certain degree of variation around a mean is expected, but something that deviates far from the mean is considered an extreme.³⁴ The IPCC distinguishes climate and weather extremes temporally, with one month serving as the time threshold. Events occurring over a period shorter than 1 month are assumed to be weather extremes, and events occurring over periods longer than 1 month are assumed to be climate extremes.³⁵ A tornado in Kansas, for example, constitutes an extreme weather event, while a drought persisting for months is an example of a climate extreme.

The diagram below demonstrates some ways that likelihoods of particular extremes can change.³⁶ the x-axis represents temperature increasing from left to right, and the y-axis represents the probability of an extreme temperature event. The dashed line represents the effect of climate change. Shifting the mean, e.g., toward the right, moves the entire distribution toward warmer temperatures.

³³ IPCC, 2012: Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation; John Carey, “Storm Warnings: Extreme Weather Is a Product of Climate Change,” *Scientific American*, June 28, 2011; John Carey, “Our Extreme Future: Predicting and Coping with the Effects of a Changing Climate,” *Scientific American*, June 30, 2011.

³⁴ János Mika, “Changes in Weather and Climate Extremes: Phenomenology and Empirical Approaches,” *Climatic Change* 121, no. 1 (November 1, 2013): 15–26, doi:10.1007/s10584-013-0914-1.; Richard W. Katz and Barbara G. Brown, “Extreme Events in a Changing Climate: Variability Is More Important than Averages,” *Climatic Change* 21, no. 3 (July 1, 1992): 289–302, doi:10.1007/BF00139728.

³⁵ IPCC, 2012: Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation; Mika, “Changes in Weather and Climate Extremes.”

³⁶ IPCC, 2012: Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation, 111.

This makes extreme heat events more common. Increased variance without a shift in the mean narrows or, as in this case, spreads out the distribution, which makes extremes at either more or less rare, respectively. There can also be changes in the shape of the distribution around a constant mean. In the last example the symmetry has changed to favor extremes at the hotter end of the distribution. Changes in the frequency of extremes may be linked to any one or more of these shifts in probability distribution.

Investigating the relationship between climate change and extreme weather entails the use of Global Circulation Models (GCMs). GCMs simulate the interactions of the atmosphere, oceans, land surface, and ice and are used for a variety of purposes from study of the dynamics of the climate system to projections of future climate conditions. These projections include average temperature and precipitation and, in some areas, can even suggest changes in storm tracks, frequency, and intensity. In 2012, the IPCC released a special report on extreme events and disasters, explicitly addressing concerns that danger from extreme events like droughts, floods, and hurricanes might be increased by climate change. It focuses on five types of changes in extreme events: temperature, precipitation, wind/storms, and tropical and extratropical circulation phenomena.³⁷ According to the report, changes in global average temperature can lead to changes also in “the frequency, intensity, spatial extent, duration, and timing of weather and climate extremes, and can result in unprecedented extremes.”³⁸ Some of these conjectures are supported by recent observations, which suggest changes particularly in frequency and intensity of extreme temperatures and precipitation.³⁹ Because natural climate variability, including decadal or multi-decadal phenomena such as El Niño has a significant influence on such events, predicting changes in extremes remains somewhat contentious. Some extremes are more predictable than others. Long-lived extremes such as extended periods of high temperature and drought show some predictability, even on seasonal timescales, but it is more difficult to predict changes in the probability of individual short term events like tornadoes and cyclones/typhoons.⁴⁰ The IPCC is fairly confident in its predictions of future temperature and precipitation extremes, but less so in predictions

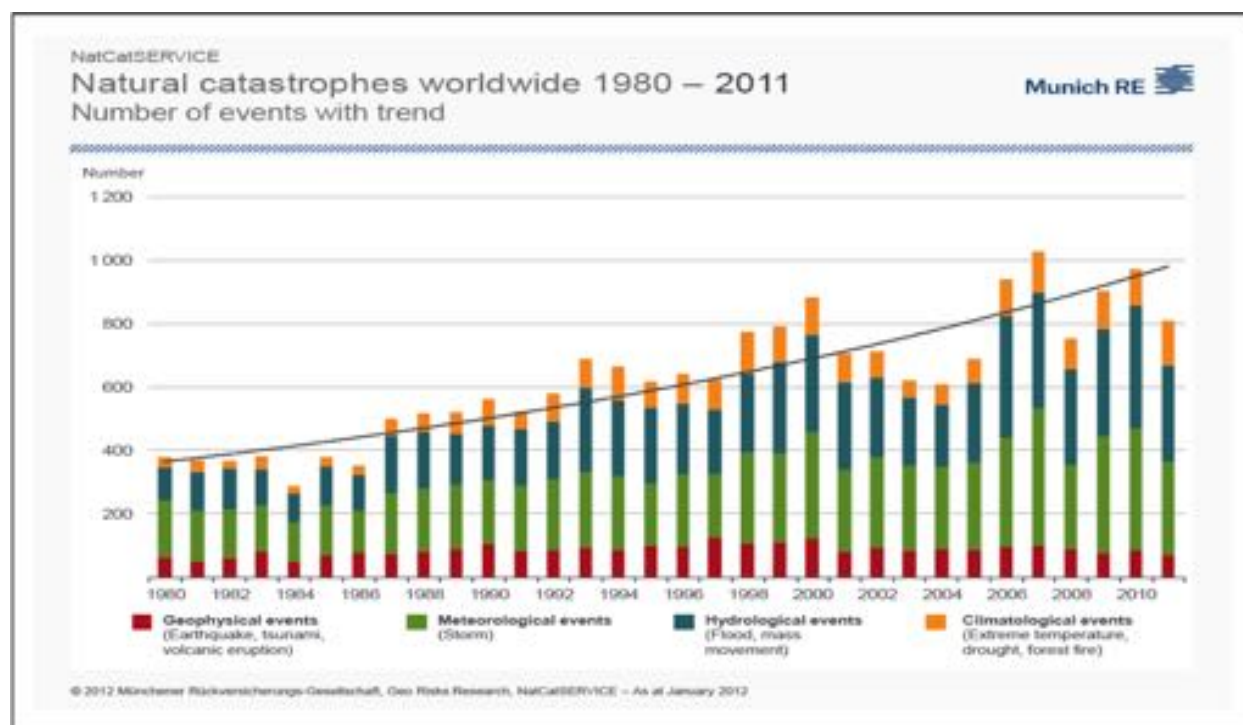
³⁷ IPCC, 2012: Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation; Mika, “Changes in Weather and Climate Extremes.”

³⁸ IPCC, 2012: Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation, 111.

³⁹ Oliver Angélil et al., “Attribution of Extreme Weather to Anthropogenic Greenhouse Gas Emissions: Sensitivity to Spatial and Temporal Scales,” *Geophysical Research Letters*, March 1, 2014. doi:10.1002/2014GL059234.

⁴⁰ Angélil et al., “Attribution of Extreme Weather to Anthropogenic Greenhouse Gas Emissions.”; Mika, “Changes in Weather and Climate Extremes.”

concerning extra-tropical cyclones, and more confident in predicting long-term than short term trends.⁴¹



The case for the connection between extreme events and climate change relies on two main signals. The graph above, from the European Insurance company Munich RE is sometimes point to as the ‘smoking gun’ in this investigation.⁴² Plotting reported storms, floods, extreme temperatures, etc. against earthquakes is intended to control for improved reporting of all kinds of extreme events. The greater increase in reported non-geophysical over geophysical events shows that improved reporting does not account for the apparent increase in climate and weather extremes over the last few decades.

The other key piece of this case comes from attributional studies, through which, scientists try to attribute specific extreme weather events to anthropogenic climate change by disentangling natural from anthropogenic factors.⁴³ This involves comparing what actually happened with what might have happened in a world without anthropogenic climate change. Using climate models to simulate the

⁴¹ IPCC, 2012: Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation.

⁴² Carey, “Storm Warnings.”; Carey, “Our Extreme Future.”

⁴³ Thomas C. Peterson, Peter A. Stott, and Stephanie Herring, “Explaining Extreme Events of 2011 from a Climate Perspective,” *Bulletin of the American Meteorological Society* 93, no. 7 (July 2012): 1041–67, doi:10.1175/BAMS-D-12-00021.1.; Thomas C. Peterson et al., “Explaining Extreme Events of 2012 from a Climate Perspective,” *Bulletin of the American Meteorological Society* 94, no. 9 (September 1, 2013): S1–S74, doi:10.1175/BAMS-D-13-00085.1.; Angélil et al., “Attribution of Extreme Weather to Anthropogenic Greenhouse Gas Emissions.”

conditions we could have experienced in its absence (typically meaning at estimates of pre-Industrial CO² levels), it is then possible to compare differences in the probability of particular events such as heatwaves, floods and droughts between climate model simulations with and without human influence on climate.⁴⁴ The extremely hot summers in Europe in 2003 and Australia in 2013, for example have both been linked to climate change in this way.⁴⁵ It is important to recognize, however, that the results of these projections do not demonstrate that the European and Australian heatwaves would not have occurred without climate change. Rather, they show that climate change made these events more likely than they would have been if climate change were not occurring. Even with this qualification, there are many challenges, both for attributing and predicting extreme events that have yet to be overcome. The main sources of uncertainty that remain concern natural variability, projections of future emissions, and accuracy of models.⁴⁶ Because “a wide range of extreme events could occur even in an unchanging climate” it remains a challenge to associate a single extreme event with a specific cause such as increasing greenhouse gases.⁴⁷

One way that climate scientists try to improve accuracy of models is through downscaling. Downscaling is the process of converting GCM projections, which are drawn with a brush about the width of a degree of latitude, to more detailed projections of regional changes.⁴⁸ There are two main forms of downscaling. Dynamical downscaling uses output from a GCM to drive a regional, numerical model, more similar to that used in weather prediction, which simulates local conditions in greater detail.⁴⁹ In statistical downscaling, a statistical relationship is established from observations between large scale variables, like atmospheric surface pressure, and a local variable, like the wind speed at a particular site, which is then used to derive information about the local variable from the large scale variables.⁵⁰ Downscaling is still developing, however, and some have questioned whether it can really provide answers to the questions it sets out to resolve.⁵¹ For example, some have questioned whether improved

⁴⁴ Ibid.

⁴⁵ Carey, “Storm Warnings.”

⁴⁶ IPCC, 2012: Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation.

⁴⁷ Ibid, 127.

⁴⁸ B. C. Hewitson et al., “Interrogating Empirical-Statistical Downscaling,” *Climatic Change* 122, no. 4 (February 1, 2014): 539–54, doi:10.1007/s10584-013-1021-z.; R. L. Wilby et al., “Statistical Downscaling of General Circulation Model Output: A Comparison of Methods,” *Water Resources Research* 34, no. 11 (November 1, 1998): 2995–3008, doi:10.1029/98WR02577.

⁴⁹ Wilby et al., “Statistical Downscaling of General Circulation Model Output.”

⁵⁰ Ibid.

⁵¹ Hewitson et al., “Interrogating Empirical-Statistical Downscaling.”

spatial resolution actually entails more accurate predictions.⁵² While improvements to model accuracy are being made, the remaining uncertainties are many, which creates challenges for policy-makers in planning for and adapting to an uncertain future. Without widely accepted standards by which to judge different evidence, this scientific uncertainty, as we've already seen in climate change debates, adds fuel to the fire of inadequately informed public climate change debate. In the next section, I explore what discursive connections are being made between climate change and extreme weather in greater detail.

⁵² Ibid.

Analysis

Extreme weather events are connected to climate discourse by a variety of sources, including journalistic and entertainment media. While this connection is beginning to be recognized as having the potential to motivate climate action at both personal and policy levels, we must be critical of the mode of presentation of this connection, what narratives are being implicitly reinforced or silenced, and their implications.

To analyze the connection between climate change and extreme weather in public discourse I employ a diverse set of methodologies. First, I must establish that this connection exists, which I do using content analysis. Then, I focus on one, high-profile extreme weather event, Typhoon Haiyan, which has been frequently discussed as a climatic disaster. Using the Typhoon as a discourse case study, I interrogate the nature of this connection through images put out by the press, speeches by policymakers, and written opinion pieces from news outlets and online blogs. Lastly, I use literary analysis to explore fictional interpretations of climate change, risk, and extreme weather. To bring together these diverse approaches I apply an overarching narrative analysis to pull out what climate change stories are being told in and through weather events that are perceived as climate change related.

Connecting the Dots: Climate Change and Extreme Weather in World News

As part of ongoing research at the Center for Science and Technology Policy Research (CSTPR), the International Collective on Environment, Culture, and Politics (ICE CaPs) monitors media coverage of climate change.⁵³ The methods used were initially developed by geographer Maxwell Boykoff, whose work on climate change in the media I have discussed elsewhere, and his colleague Maria Mansfield at Oxford, and are now continued by Boykoff and other ICE CaPs participants at the University of Colorado-Boulder. They monitor fifty news sources from around the world. These sources are selected through a decision process involving weighting of three main factors: (1) geographical diversity (favoring a greater geographical range), (2) circulation (favoring higher circulating publications), and (3) reliable access to archives over time (favoring those accessible consistently for longer periods of

⁵³According to their mission, ICE CaPs “seeks to promote the development of workable and effective responses to complex environmental challenges from the local to the international, and to provoke public engagement with these issues.” Visit their webpage (<http://sciencepolicy.colorado.edu/icecaps/>) or the of the CSTPR (<http://sciencepolicy.colorado.edu/>) to learn more about ongoing research projects.

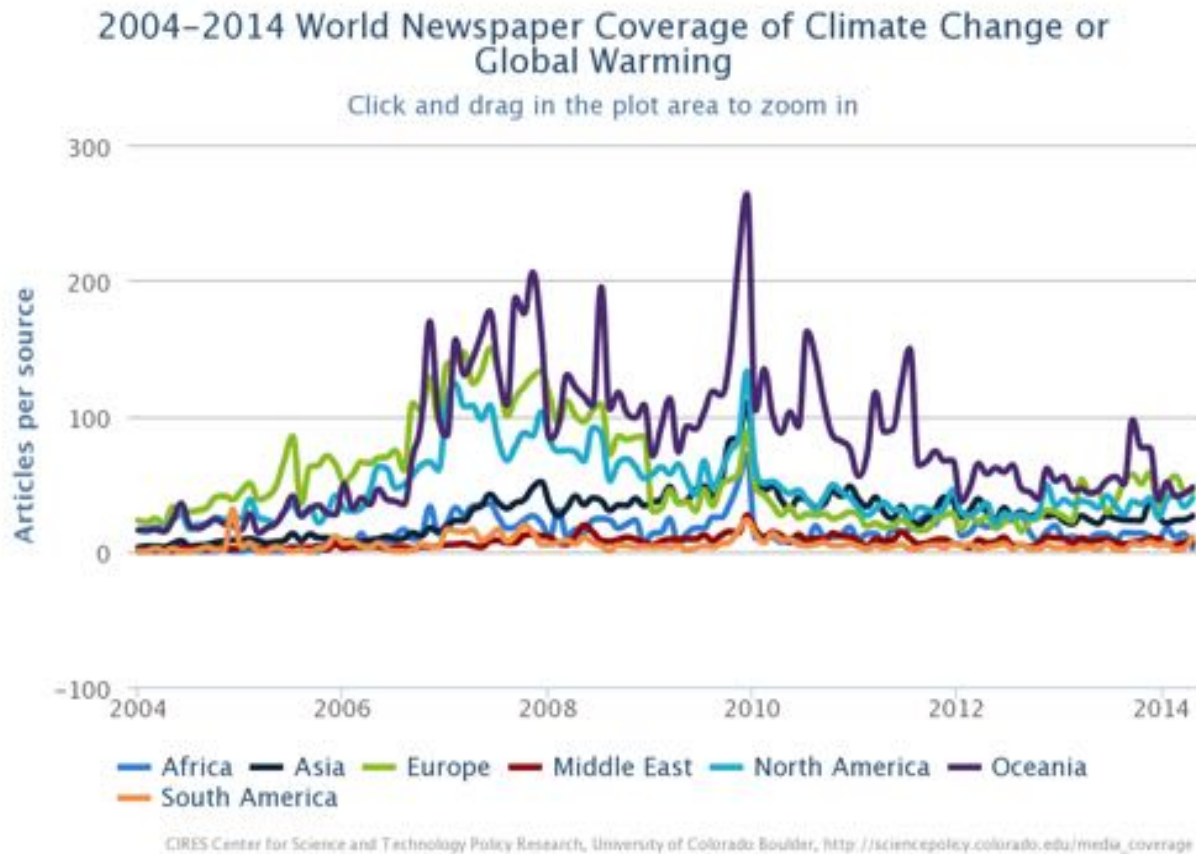
time).

Through Lexis Nexis, they search the following sources: The Age (Australia), The Australian (Australia), Business Day (South Africa), the Courier-Mail (Australia), Daily Mail (Mail on Sunday) (United Kingdom), the Daily Telegraph & Sunday Telegraph (Australia), Dominion Post (New Zealand), the Express and Express on Sunday (United Kingdom), the Ghanaian Chronicle (Ghana), the Globe and Mail (Canada), the Guardian and Observer (United Kingdom), Gulf Daily News (Bahrain), the Herald (Zimbabwe), the Independent (and Sunday Independent) (United Kingdom), the Irish Times (Ireland), the Jerusalem Post (Israel), the Korea Times (South Korea), the Los Angeles Times (United States), the Daily Mirror (and Sunday Mirror) (United Kingdom), the Nation (Thailand), National Post (Canada), the New Straits Times (Malaysia), the New York Times (United States), New Zealand Herald (New Zealand), the Prague Post (Czech Republic), The Press (New Zealand), The Scotsman (and Scotland on Sunday) (United Kingdom), the South China Morning Post (China), the Straits Times (Singapore), The Sun and The Sun on Sunday (United Kingdom), Sydney Morning Herald (Australia), the Telegraph and Telegraph on Sunday (United Kingdom), the Times and Times on Sunday (United Kingdom), the Toronto Star (Canada), USA Today (United States), the Wall Street Journal (United States), and the Washington Post (United States). Through Factiva, they search the following additional sources: the Bangkok Post (Thailand), China Daily (China), Daily Star (Lebanon), El Pais (Spain), the Hindu (India), Hindustan Times (India), the Indian Express (India), Japan News (Japan), La Nacion (Argentina), Manila Bulletin (Philippines), the Nation (Pakistan), O Globo (Brazil), and Times of India (India). In LexisNexis, they use the Boolean string 'climate change or global warming,' and the date ranges as well as individual sources are selected through the 'advanced options' function. In Factiva, they additionally conduct individual searches for 'calentamiento global' as well as 'cambio climático' and then manually search for and eliminate duplicates. For all searches through both the LexisNexis and Factiva databases, the default option for duplicates was chosen.

The figure below is one of many graphs generated using data from the ICE CaPs content analysis.⁵⁴ The number of articles, per each newspaper source, mentioning 'climate change' or 'global warming' are plotted, month-by-month, from 2004 to 2014. This particular figure incorporates global

⁵⁴ Nacu-Schmidt, A., McAllister, L., Gifford, L., Daly, M., Boykoff, M., Boehnert, J., Andrews, K., and Wang, X., (2014). World Newspaper Coverage of Climate Change or Global Warming, 2004-2014. Center for Science and Technology Policy Research, Cooperative Institute for Research in Environmental Sciences, University of Colorado, Web. April 20, 2014. http://sciencepolicy.colorado.edu/media_coverage.

data, separated into distinct regions. Of note are the surges in numbers of articles per source during and leading up to 2007 and at the end of 2009, as well as the high number of articles per source in Oceania after November 2006.



In his research, Boykoff has suggested that coverage of climate change, like that of many environmental and social issues, is highly event driven.⁵⁵ The peaks in coverage in 2007 and 2009 are likely explicable in terms of events of those years. In 2007, the IPCC released its Fourth Assessment Report, an occurrence that is often well covered by the press, and in 2009, both the 15th UNFCCC Conference of the Parties and the ‘Climategate’ scandal were newsworthy topics. However, why coverage increased so dramatically in Oceania around that time, and why it persisted for so long, remain unclear.

In adapting this methodology for my purposes, I was constrained by available academic resources. Because Lewis & Clark College doesn’t have access to the Factiva databases, I chose to only analyze sources that were readily available in LexisNexis Academic. The most noticeable

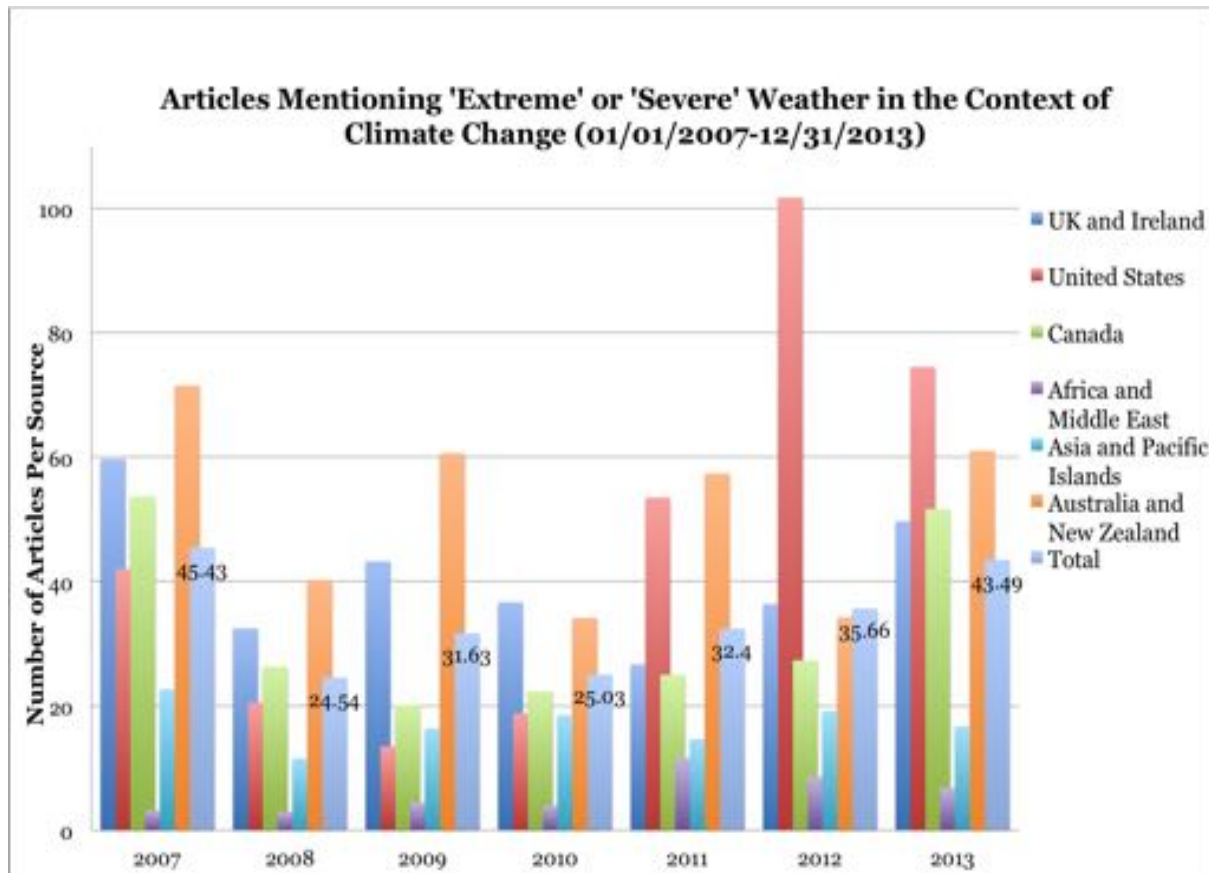
⁵⁵ Boykoff, *Who Speaks for the Climate?*.

consequence of this decision was that my analysis only includes English language newspapers. I searched 36 newspapers from 17 different countries around the world. I searched the following sources (in alphabetical order): The Age (Australia), The Australian (Australia), Business Day (South Africa), The Courier-Mail (Australia), The Daily Mail (and Mail on Sunday) (United Kingdom), The Daily Telegraph & Sunday Telegraph (Australia), The Daily Telegraph and The Sunday Telegraph (United Kingdom), The Dominion Post (New Zealand), The Financial Times (United Kingdom), The Ghanaian Chronicle (Ghana), The Globe and Mail (Canada), The Guardian (United Kingdom), The Gulf Daily News (Bahrain), The Herald (Zimbabwe), The Independent (and Independent on Sunday) (United Kingdom), The Irish Times (Ireland), Japan Times (Japan), Jerusalem Post (Israel), Korea Times (South Korea), The Los Angeles Times (United States), National Post (Canada), The Nation (Thailand) The New Straits Times (Malaysia), The New York Times (United States), New Zealand Herald (New Zealand), The Press (New Zealand) The Scotsman (and Scotland on Sunday) (United Kingdom), South China Morning Post (China), The Straits Times (Singapore), The Sun and The Sun on Sunday (United Kingdom), The Sydney Morning Herald (Australia), The Times and Sunday Times (United Kingdom), Toronto Star (Canada), USA Today (United States), and The Washington Post (United States). Of the sources searched by Bankoff et. al., I eliminated the following: The Bangkok Post (Thailand), China Daily (China), Daily Star (Lebanon), El Pais (Spain), The Hindu (India), Hindustan Times (India), The Indian Express (India), Japan News (Japan), La Nacion (Argentina), O Globo (Brazil), The Prague Post (Czech Republic), The Times of India (India), and The Wall Street Journal (United States). I also included the Japan Times (Japan), as the only Japanese newspaper available to me through LexisNexis Academic.

For convenience, I grouped the newspapers loosely based on the following regions: Africa and Middle East (five newspapers), Asia and Pacific Islands (six newspapers), Australia and New Zealand (eight newspapers), Canada (three newspapers), the United States (five newspapers), and the United Kingdom and Ireland (nine newspapers). I then searched each of these groups for the boolean string ‘climate change’ OR ‘global warming’ in individual years from 2007 through March 31, 2014. I selected the sources and date ranges using the ‘advanced options’ function, and used the default option for duplicates. Using the same settings, I also searched these groups for the boolean string ‘climate change’ OR ‘global warming’ AND ‘weather’ AND ‘extreme’ OR ‘severe.’ If there is a real, rather

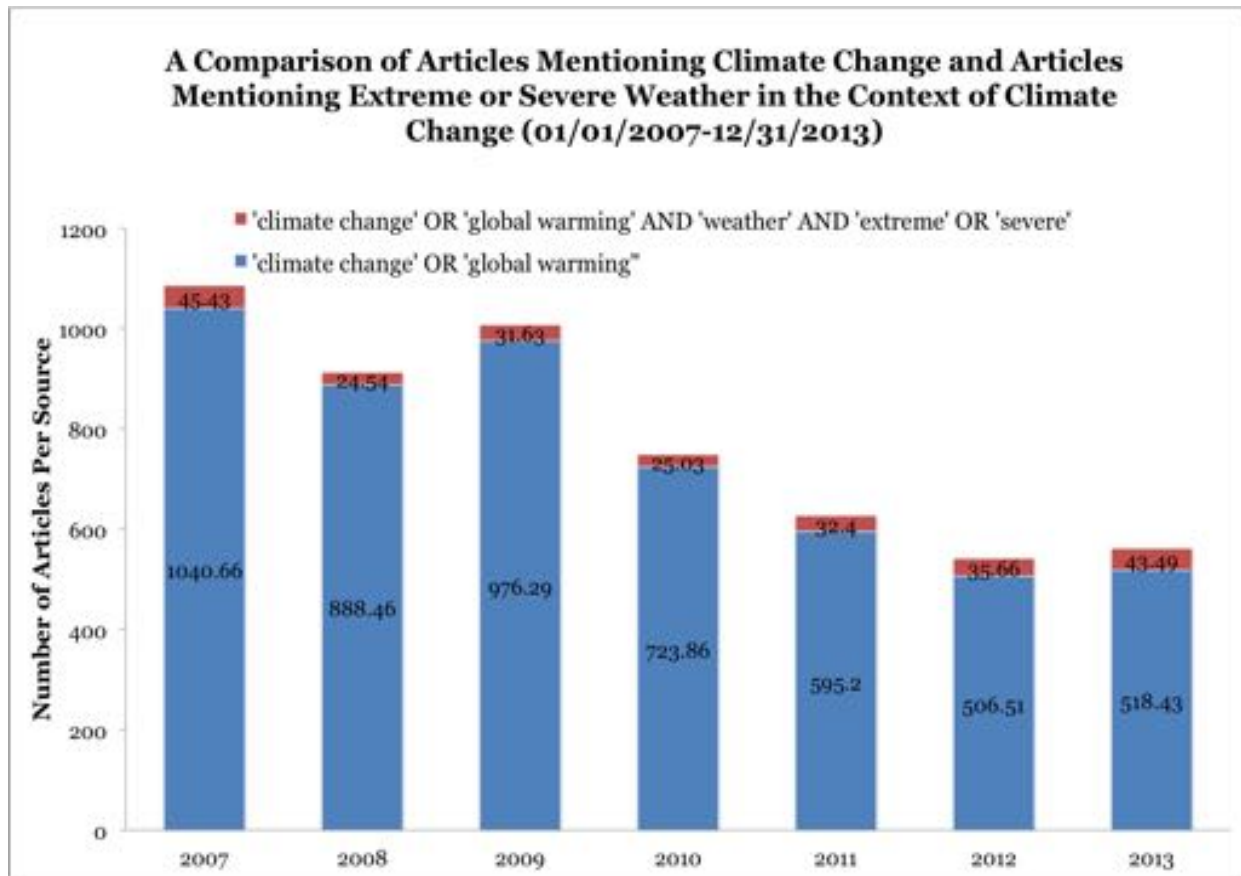
than merely apparent, increase in the use of extreme or severe weather as a representation of climate change, there should be an increase in the number of articles mentioning 'climate change' OR 'global warming' AND 'weather' AND 'extreme' OR 'severe,' in comparison to number of articles mentioning 'climate change' OR 'global warming' generally.

The graph below depicts the number of articles per source mentioning the boolean string 'climate change' OR 'global warming' AND 'weather' AND 'extreme' OR 'severe,' separated by region. To obtain these values I divided the number of articles from each region by the number of sources searched in that region. Numerical values at the top of the pale blue columns indicate the total number of articles per source across all regions analyzed. Looking at articles per source by region is informative in that it controls for differences in number of sources available in each region. For example, I searched the same number of source, five, in the United States and the Africa and Middle East regions, making the difference between them all the more striking. The former has the greatest number of articles per source mentioning climate change and extreme weather, over one hundred in 2012, while the latter has the least, less than 20 in that same year.



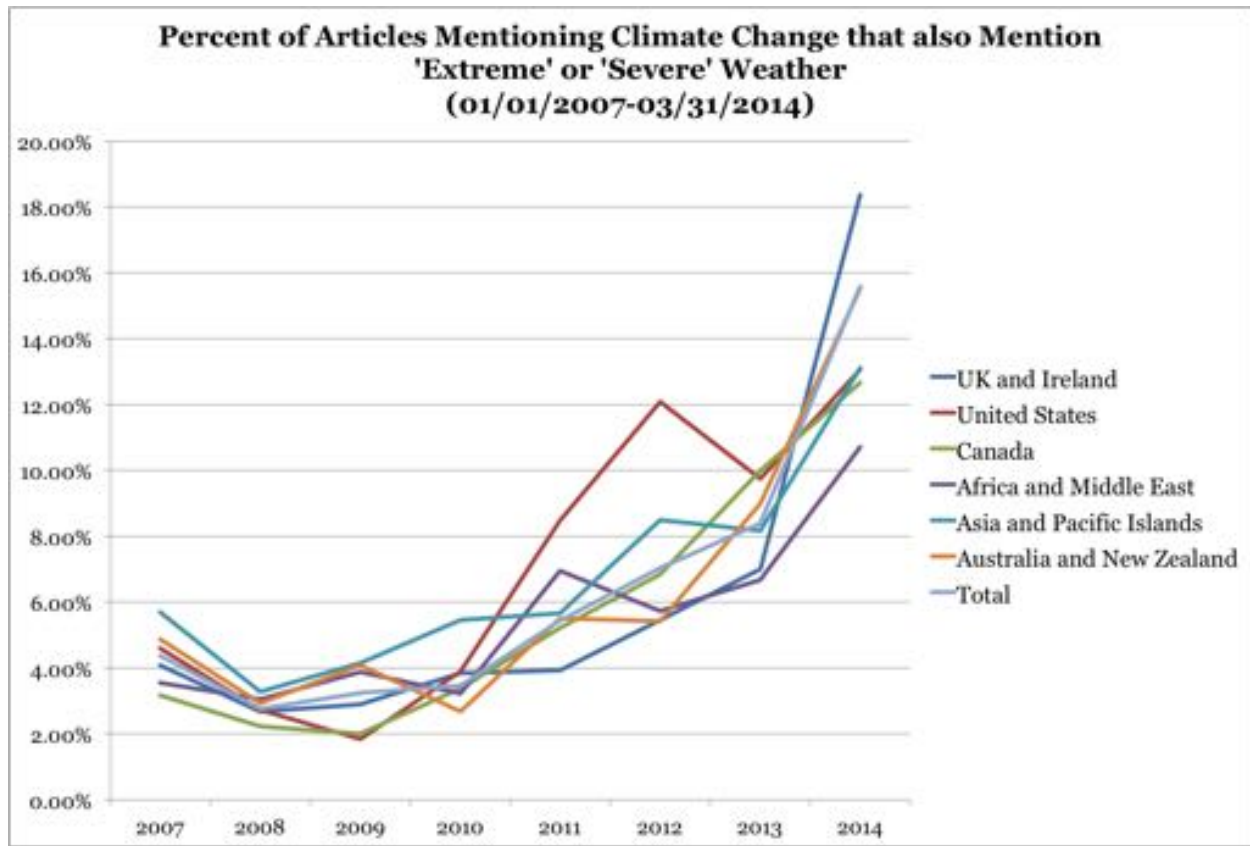
Although the greatest number of mentions falls during 2007, the most dramatic increase, 7.83 articles per source, occurred between 2012 and 2013. Following Boykoff's suggestion that the coverage of climate change is highly driven by events, it is likely that the peaks in mentions of extreme weather in reference to climate change are related to the 2007 release of AR4, which offered speculation on the effect of climate change on probability of extreme events, and the 2012 and 2013 releases of the SREX and AR5, respectively.

To construct the next graph, I added the numbers from each regional subgroup to obtain a total number of articles mentioning 'climate change' OR 'global warming' and a total number of articles mentioning 'climate change' OR 'global warming' AND 'weather' AND 'extreme' OR 'severe' for each year from 2007 to 2013. I divided these totals by the number of sources searched to obtain number of articles per source, and plotted them for each individual year.



Much like the CSTPR graph, this graph shows a peak in 2007 and in 2009, as well as an overall decrease in coverage up to the end of 2013, but differences between my results and those of researchers at University of Colorado-Boulder are present. For example, while in my graph 2007 seems to have the greatest number of articles per source, in the CSTPR graph the greatest number is in 2009. This is likely a consequence of my searching slightly different sources. As in the previous graph, mentions of 'climate change' OR 'global warming' AND 'weather' AND 'extreme' increase after 2010, but in the above graph we can see that this increase occurs while overall mentions of 'climate change' OR 'global warming' decrease.

To calculate the values for this last graph, I divided the number of articles mentioning ‘climate change’ OR ‘global warming’ AND ‘weather’ AND ‘extreme’ OR ‘severe’ by the number of articles mentioning ‘climate change’ OR ‘global warming.’ I then multiplied the resulting values by 100 to get a percent.



Because this graph shows what fraction of articles mentioning ‘climate change’ OR ‘global warming’ also mention ‘extreme’ OR ‘severe’ weather conditions, rather than just the number of articles for each, the increase in articles mentioning extreme weather in relation to climate change is much more prominent. The previous graphs depicted 2007 as the year with the greatest number of articles mentioning ‘climate change’ OR ‘global warming’ AND ‘weather’ AND ‘extreme’ OR ‘severe.’ In this graph, however, it is clear that in comparison to the number of articles mentioning ‘climate change’ OR ‘global warming’ that year, the number that also mentioned ‘extreme’ or ‘severe’ weather conditions is relatively small.

These results suggest that newspaper coverage of climate change is increasingly making

reference to extreme conditions. As the second and third graphs demonstrate, even as newspaper coverage of climate change in general decreases, the fraction of articles mentioning climate change that also mention extreme or severe conditions is steadily increasing. This analysis is limited in that it only uses English-language sources. In further studies, more newspapers could be incorporated by using a broader language base. Also, this analysis only tracks what number of articles mention the boolean strings used. I do not evaluate *how* these phenomena are discussed. I have merely established that in one medium, the newspaper, representations of climate change have increasingly referenced extreme conditions since 2010. In the next section, I turn to more qualitative questions using a group of discursive texts from Typhoon Haiyan.

The Pathos of Risk: Typhoon Haiyan as Climate Catastrophe

To interrogate the discourse of climate change and extreme weather in more depth, I use Typhoon Haiyan as a case study. In November 2013, Typhoon Haiyan, and the stir it caused at the 19th UNFCCC Conference of the Parties received widespread media attention.⁵⁶ I chose this particular event to analyze both because it occurred so recently, and because news sources made explicit references to climate change throughout its occurrence, generating ample material for discourse analysis.⁵⁷ The type of analysis I engage in here might be called a discursive semiotic analysis, in that I adopt the methods of semiotics to draw out implicit meanings. Following C.S. Peirce, I employ a tripartite conception of the sign, consisting of the sign, its object, and its interpretant, which can be roughly understood as its effects or pragmatics.⁵⁸ The ‘signs’ I analyze are the following discursive texts.

- three photographs from news articles released shortly after the Typhoon occurred,
- U.N. Philippine Delegate Naderev Saño’s speech to the 19th UNFCCC Conference of the Parties at Copenhagen in 2013,
- and two written opinion pieces, one from the LA Times and one from *FaithStreet* a religiously oriented online news outlet.

I argue that these texts indicate the presence of a narrative of guilt and vulnerability not unique to this event. This narrative reinforces the role of Filipino people as victims, by placing them in a submissive relationship, both in relation to nature, and nations of the Global North.⁵⁹ In semiotic terms the overarching objects that these signs share are the vulnerability of the Global South, and the guilt of the Global North, while their interpretant could be understood as feelings of sympathy, aid donations, or

⁵⁶ Calum MacLeod, “Exodus from Hell: Residents Flee Typhoon-Ravaged Tacloban,” *USA Today*. November 16, 2013; Hannah Strange, “Super Typhoon Haiyan Smashes into Philippines,” *The Telegraph*, November 8, 2013; John Vidal, “Typhoon Haiyan: What Really Alarms Filipinos Is the Rich World Ignoring Climate Change,” *The Guardian*, November 8, 2013, sec. World news; “Hundreds Feared Dead in Typhoon,” *BBC News*, November 9, 2013; “Typhoon Haiyan: Desperate Philippine Survivors Turn to Looting,” *Chicago Tribune*, November 13, 2013.

⁵⁷ Walden Bello, “Yes, Typhoon Haiyan Was Caused by Climate Change,” *The Nation*, November 11, 2013; Geoffrey Lean, “The Truth behind Typhoon Haiyan,” *The Telegraph*, November 15, 2013; Bjorn Lomborg, “Typhoon Haiyan Not about Climate Change: Column,” *USA Today*. accessed May 7, 2014; Calum MacLeod, “Exodus from Hell: Residents Flee Typhoon-Ravaged Tacloban,” *USA Today*. November 16, 2013; Quirin Schiermeier, “Did Climate Change Cause Typhoon Haiyan?,” *Nature*, November 11, 2013, doi:10.1038/nature.2013.14139.

⁵⁸ Marcel Danesi, *Of Cigarettes, High Heels, and Other Interesting Things : An Introduction to Semiotics*, 2nd ed.. (New York: Palgrave Macmillan, 2008).; Paul Cobley, *Introducing Semiotics* (Royston: Icon ; New York?, 2004).

⁵⁹ The term ‘Global North’ is closely associated with the idea of a ‘development gap.’ Here, I avoid use of the developed/undeveloped dichotomy in an attempt to leave behind its normative significance. ‘Global North’ often refers to countries above the world per capita GDP, but in this context I primarily intend major per capita fossil fuel emitting nations including the United States, Australia, and the United Kingdom.

other restorative actions. Because the construction of the vulnerability of the Philippines in the face of climatic change occurs against the implied dominance and security of nations like the United States, it is with them that blame is placed. However, they are also charged with great responsibility, both to mitigate emissions of CO² and to provide aid to more vulnerable nations.

In her visual analysis of the 1923 Kanto Earthquake in Japan, Gennifer Weisenfeld notes that different media “produce modes of seeing, understanding, and eventually remembering,” a disastrous event.⁶⁰ By depicting those harmed by a natural disaster, as well as the wreckage and ruins left in its wake, media, particularly images, encourage an “aesthetics of horror and spectacle,” that construes the consumer as voyeur.⁶¹ The consumer, a reader or viewer, is placed in a position of privilege, while the people, region, or even entire nation affected are rendered submissive, vulnerable, or otherwise disempowered. Expanding upon Weisenfeld’s methods of media analysis, I incorporate images, text, and video, to characterize narratives (re)produced by popular media in the wake of Typhoon Haiyan. Gregory Bankoff has argued that disaster vulnerability is a Western discourse that justifies interference on the part of secure, ‘Global North’ nations in vulnerable places under the guise of aid or relief.⁶² As mentioned above, media play a key role in producing the perceptions that enable such actions, for example, through the phenomena of ‘othering’ or ‘exocitizing’ natural disasters and their effects.⁶³ I argue that media representation of Typhoon Haiyan conforms to the tropes described by, Bankoff and Weisenfeld, but is armed with additional ammunition by the attribution of the typhoon to climate change. Because of this connection I argue that media representation of the event construes the Philippines as dependent and vulnerable, while implicating members of the Global North as responsible for the event.

⁶⁰ Gennifer S. Weisenfeld, *Imaging Disaster : Tokyo and the Visual Culture of Japan’s Great Earthquake of 1923* (Berkeley: University of California Press, 2012). 1.

⁶¹ Ibid.

⁶² Gregory Bankoff, “Rendering the World Unsafe: ‘Vulnerability’ as Western Discourse,” *Disasters* 25, no. 1 (2001): 19–35, doi:10.1111/1467-7717.00159.

⁶³ Sarah Jaquette Ray, *The Ecological Other : Environmental Exclusion in American Culture* (Tucson: University of Arizona Press, 2013).



“A mother and her children brave heavy rains as they head for an evacuation center amidst strong winds as Typhoon Haiyan pounded Cebu City, in central Philippines on November 8, 2013. (STR/AFP/Getty Images)” - Huffington Post⁶⁴

This photograph depicts a woman walking through the rain with two children. All three are soaking wet. The woman covers her head with a towel, and the young girl’s hair clings to her cheeks and forehead. Apart from the rain, there are few direct indicators of typhoon activity. However, this photograph, is one of several in a series entitled “Super Typhoon Haiyan Photos Show Force of Nature in the Philippines.”⁶⁵ However, the coloring and composition of the photograph direct the viewer’s gaze toward the three individuals. They are placed in the foreground, just off-center, and are brightly colored in comparison to their dull and out-of-focus. This suggests that the main focus of this image is the people in it, rather than the ‘force of nature’ mentioned in the title of the series and referenced by the caption.

⁶⁴ Images have been left with their original captions from the news articles in which I found them

⁶⁵“Super Typhoon Haiyan Photos Show Force Of Nature In The Philippines,” *Huffington Post*, accessed May 8, 2014,



“Residents gather salvageable materials from the ruins of houses after Typhoon Haiyan battered Tacloban in central Philippines. Photograph: Erik de Castro/Reuters” - The Guardian

People figure prominently in the composition of this next photograph as well. However, in this one we see more attention to the effects of the typhoon. In the front right corner of the image is a child in a red shirt. His shoulders are just barely lifted, giving the impression of a slight hunch, and he looks off into the distance, across the frame of the photograph, rather than at the camera. In the background are two more children, along with wooden beams, chunks of concrete, sheets of corrugated metal, and other artifacts. The child diagonally across from the first also wears a red shirt, drawing one’s gaze from the bottom right-hand corner to the top left-hand corner of the photograph. It’s impossible to see the facial features of the two children in the background, so the viewer only sees their bodies, surrounded by wreckage left behind by the storm. The angle of the photograph makes it difficult to see the end of this pile, and the slightly submissive posture of boy in the foreground, and the intensity of his gaze, reinforce the generally ‘battered’ appearance of the entire scene.



“A girl rummages through debris in an area devastated by Typhoon Haiyan in the Philippines. (Dondi Tawatao/Getty Images / November 10, 2013)” - LA Times

This last photograph also depicts a child. Another child sits in a tan colored chair to the right of the viewer, and a few other individuals can be made out in the background. Although she is described as rummaging through “debris,” there are three light blue chairs around the young girl that seem to be purposefully placed, and clothes hang on lines in the background. The composition of the photograph directs one’s gaze to the center, with the blue on the girl’s shirt echoing that of the chairs. Again the faces of the individuals are hidden from the viewer, and instead the image is focused on the girl’s body, flanked by the chairs, beams of wood, and other items.

Something that all of these images share is a focus on the individual subject, specifically women and children. Overrepresentation of women in the Global South in reference to climate change has garnered increasing scholarly attention. For example, Zarqa Ali, in problematizing gendered coverage of floods in Pakistan, has argued that while presentation of the female as vulnerable subject has aroused sympathy among readers and donors, inspiring them to give immediate aid, it also reinforces gender

stereotypes.⁶⁶ Similar studies have criticized this phenomena in Bangladesh.⁶⁷ Disasters stress social relations, leading to disorder. Women experience different stresses than men in these situations due their socially defined roles and capabilities, as primary caretakers, for example, which makes them a frequent focal point for sympathy and concern.⁶⁸ This representation of women as victims of disaster reproduces an association between women and disaster vulnerability, what some have called a ‘feminization of disaster.’⁶⁹ Children can similarly be used to signify vulnerability, because of their dependent role in society and the family.

Returning to the semiotic framework alluded to above, the images presented here can be deconstructed by reference to the three part division of sign, object, and interpretant. Each of these parts is constitutive of the sign’s overall meaning. In the photographs above, the object of the sign is made up of visual elements, both the content and composition. What those elements represent or signify is the sign. The interpretant can be understood contextually as the relationship between the image and the viewer. For example, the ‘wreckage,’ ‘debris,’ and ‘heavy rains’ and ‘strong winds’ depicted in the photographs are visual elements, the significance of which is the impact of the typhoon. Similarly, the individuals in the photographs are visual elements that can be understood to represent the Filipino people. The newspapers from which these photographs were taken are all based in either the United States or the United Kingdom, suggesting the relationship of the viewer is that of someone who did not experience the typhoon. Therefore, these images can be understood as participating in the construction of the Filipino subject as vulnerable in comparison to the privileged viewer. Continuing this analysis, I turn to a speech delivered at the most recent UNFCCC Conference of the Parties in November 2013.

Typhoon Haiyan struck the Philippines at a time when many eyes were already directed toward the issue of climate change, the 19th UNFCCC Conference of the Parties (COP19). The Philippines’ UNFCCC delegate, Naderev Saño, delivered a speech on the dangers of climate change and chastised

⁶⁶ Zarqa S. Ali, “Visual Representation of Gender in Flood Coverage of Pakistani Print Media,” *Weather and Climate Extremes*, accessed May 5, 2014, doi:10.1016/j.wace.2014.04.001.

⁶⁷ Md Sadequr Rahman, “Climate Change, Disaster and Gender Vulnerability: A Study on Two Divisions of Bangladesh,” *American Journal of Human Ecology* 2, no. 2 (2013): 72–82, doi:10.11634/216796221302315.; Khurshed Alam and Md. Habibur Rahman, “Women in Natural Disasters: A Case Study from Southern Coastal Region of Bangladesh,” *International Journal of Disaster Risk Reduction* 8 (June 2014): 68–82, doi:10.1016/j.ijdrr.2014.01.003.

⁶⁸ Alam and Rahman, “Women in Natural Disasters.”; Ali, “Visual Representation of Gender in Flood Coverage of Pakistani Print Media.”; Weisenfeld, *Imaging Disaster*.

⁶⁹ This nomenclature is a reference to the feminization of poverty, a term coined by Diana Pearce in her 1978 article “The Feminization of Poverty: Women, Work, and Welfare.”

the organization for failing to take action to protect the Philippines, and the Global South more generally, from this danger.⁷⁰

Saño's argumentative strategy is one of pathos. Drawing upon the devastation of Typhoon Haiyan, he appeals to the emotions of world leaders, urging attendants of the COP to come to a "meaningful outcome." For him a meaningful outcome means concrete pledges to a loss and damages mechanism to pay reparations to countries affected by extreme weather as climate change continues. Saño's plea is predicated on the idea that it is the responsibility of other countries to protect the Philippines from the effects of climate change. Saño explicitly points to the failure of governments around the world to mitigate their emissions, stating that "by failing to meet the objective of the Convention, we may have ratified the doom of vulnerable countries." As discussed above, vulnerability is problematic term with ties to colonial interests. Saño's use of the term may suggest an internalization of the discourse of vulnerability, which is all the more significant coming from the mouth of a government representative. This is further supported by the examples Saño uses to illustrate the impact of climate change, which are primarily drawn from the Global South:

"To anyone who continues to deny the reality that is climate change, I dare you to get off your ivory tower and away from the comfort of your armchair. I dare you to go to the islands of the Pacific, the islands of the Caribbean and the islands of the Indian ocean and see the impacts of rising sea levels; to the mountainous regions of the Himalayas and the Andes to see communities confronting glacial floods, to the Arctic where communities grapple with the fast dwindling polar ice caps, to the large deltas of the Mekong, the Ganges, the Amazon, and the Nile where lives and livelihoods are drowned, to the hills of Central America that confronts similar monstrous hurricanes, to the vast savannas of Africa where climate change has likewise become a matter of life and death as food and water becomes scarce. Not to forget the massive hurricanes in the Gulf of Mexico and the eastern seaboard of North America."⁷¹

While he does reference Hurricanes Katrina and Sandy, Saño predominantly uses

⁷⁰ *In Tearful, Amazing Speech, Philippines Climate Delegate Announces Hunger Strike*, 2013, http://www.youtube.com/watch?v=S6RXGGFBdlo&feature=youtube_gdata_player.

⁷¹ Partial transcript available: Naderev Saño, "Typhoon Haiyan: We Cannot Afford to Procrastinate on Climate Action," *The Guardian*, November 11, 2013, sec. Environment, <http://www.theguardian.com/world/2013/nov/11/typhoon-haiyan-philippines-climate-change>.

examples from the developing world, suggesting that extreme weather is more of a threat to the Global South than the Global North.

Although the phrasing is diplomatic throughout, Saño's speech can be seen as an indictment of the complicity of developed countries in the devastation of countries affected by extreme weather. This is another example of how the vulnerability of the developing world is constructed against the guilt of developed nations. As noted above, while this discourse of guilt/responsibility and innocence/vulnerability may successfully motivate climate policy (something which remains to be seen), it does so by reinforcing patterns of dependence and Global North/South dichotomies. Next, I further reinforce this claim using two opinion pieces from the United States.

The use of the Philippines to represent climate change vulnerability continues in two written opinion pieces, one from the *LA Times* and one from *FaithStreet* a religiously oriented online news outlet. Using these texts as discursive signs, we can understand their meaning as constructed by the relationship between the reader and the text. Given that these remarks appear in news outlets based in the United States, we have grounds to interpret them as directed at readers in the United States. The arguments in each article are intended to convince citizens of the United States, the Global North, to hold a particular perspective on climate change. Typhoon Haiyan is used to support this argument, functioning as a symbol of the effects of climate change.

In an essay about the "Lessons of Typhoon Haiyan," Paul Whitefield notes that the devastation of Typhoon Haiyan is attributable to "too many people" living in places vulnerable to extreme weather.⁷² He contrasts the preparation for extreme events in the United States to the lack of such preparation in other countries. "California's air is cleaner today because of environmental regulations. Our water too. And our buildings are safer from earthquakes because of tighter building codes. We've shown it can be done. Other states, other countries, can do it too. (Are you listening, China?)" In this quote Whitefield holds up the United States, California specifically, as an example of progress in mitigating disaster risk. This suggests a superiority over less prepared countries, explicitly reinforced by his tongue-in-cheek query toward China. Claiming the 'we,' the United States, have "shown it can be done" directly chastises those who have not 'done it.' "Other states, other countries, can do it too," says Whitefield,

⁷² "Lessons of Typhoon Haiyan: Tackle climate change, or it will tackle us" by Paul Whitefield
<http://www.latimes.com/opinion/opinion-la/la-ol-typhoon-haiyan-climate-change-20131112,0,780623.story#axzz2kccD87bY>

but the implication is that they haven't. This could be interpreted to suggest that the countries Whitefield is criticizing (although, which countries those are is not entirely clear) are simply unwilling to change, but could also be interpreted to mean that while other countries can, in theory, make the policy changes Whitefield suggests, they are struggling to do so in practice. Both interpretations imply that such countries need assistance in achieving these goals. Furthermore, Whitefield explicitly uses Typhoon Haiyan as a sort of rallying cry. "A lot of people are dead in the Philippines today. A lot more have lost everything. For them, it's too late to do something about climate change. So for them, and for future victims, let's forget the politics. Let's just be sensible." In this remark, the Philippines are used as a signifier of the need for action on climate change. By drawing on feelings of sympathy toward the Philippines and "future victims," Whitefield urges the reader to "forget the politics" and "just be sensible." However, the Philippines seems to be excluded from these measures, because, for them "it's too late to do something about climate change." While it may not be Whitefield's intent, his point goes so far as to suggest that Typhoon Haiyan has rendered the Philippines powerless to act.⁷³ In rendering Typhoon Haiyan a focal point for climate change action and awareness, this essay is underwritten by uninformative rhetoric that constructs the Philippines, and other vulnerable nations, as powerless to engage in the very actions Whitefield prescribes. By suggesting that we "forget the politics," Whitefield's essay presupposes that action on climate change can take place somewhere outside of the power asymmetries currently embedded in global relations. The next text I analyze similarly deploys language reminiscent of dichotomous Global North-Global South rhetoric, and focuses in particular on climate change as a moral, rather than political, issue.

Rev. Dr. Susan Brooks Thistlethwaite uses Typhoon Haiyan to denounce "the sin of climate change denial," claiming that such storms are not acts of God, but rather of "wilful disregard for God's creation."⁷⁴ Thistlethwaite's essay explicitly identifies the typhoon as an evil for which humans are responsible. She argues that Typhoon Haiyan is a "moral evil, traceable to human sin" on two levels,

⁷³ Obviously, those who died in the Typhoon are powerless to act. However, it is unclear why those who have "lost everything" would be. In fact, it seems reasonable to assume that they are just as likely to be galvanized, in the way Whitefield urges us to be, as defeated by the experience.

⁷⁴ Susan Brooks Thistlethwaite, "'Super' Typhoon Haiyan: Suffering and the Sin of Climate Change Denial,"

OnFaith, accessed May 12, 2014,

<http://www.faithstreet.com/onfaith/2013/11/12/super-typhoon-haiyan-suffering-and-the-sin-of-climate-change-denial/30026>.

“[f]irst, there is the moral evil of continuing to pump fossil fuels into the atmosphere, producing global warming. Second, however, is the moral evil of climate change denial, that is, those who would continue to deny, in the face of mounting evidence, that violent climate change is upon us and it is accelerating.”⁷⁵ Thistlethwaite cites the United States Environmental Protection Agency’s statement that the primary human contribution to global warming is the burning of fossil fuels, and a Pew Research Center poll claiming that Republicans in the United States are divided about climate change. The use of these sources strongly suggests that her remarks, like Whitefield’s, are directed particularly at the United States. If there is a moral evil associated with pumping fossil fuels into the atmosphere, then the U.S. is easy to condemn, and for climate change denial, given the highly publicized nature of climate change debates in the U.S. over the last few decades, we can be condemned a second time by Thistlethwaite’s standards. She prescribes confession, repentance, and change as the first steps to address this evil. We must confess that we are responsible for Typhoon Haiyan, repent for what has already been lost by our reluctance to act, and change our ways to avoid similar mistakes in the future. While these suggestions may be apt, it remains unclear exactly what sorts of action would actually achieve that goal, which is one of the problems with both Thistlethwaite’s and Whitefield’s essays. Much like Whitefield, Thistlethwaite expresses disapproval for politicization of climate change: “as some argue politically, the evidence continues to mount, and more people continue to suffer and even die from extreme climate events.”⁷⁶ Using Typhoon Haiyan as an example of an extreme climate event, Thistlethwaite’s essay construes the U.S. as ‘guilty’ for this event because of its contribution to climate change, and suggests that political deliberation cannot address this “moral evil.”⁷⁷

These articles highlight the perception that it is the responsibility of of the Global North to take action on climate change. While Whitefield primarily notes the ability of developed nations to “do something,” whatever that is, Thistlewaite cites moral imperative as the source of this responsibility. Both decry political stagnation and climate change denial, with Thistlewhite going so far as to call it a sin. This sentiment is echoed by UN climate chief Christiana Figueres who asserts that it is immoral to politicize

⁷⁵ Ibid.

⁷⁶ Thistlethwaite, “‘Super’ Typhoon Haiyan.”

⁷⁷ Ibid.

climate change given the devastating impact of extreme weather events.⁷⁸ However, arguments treating nations like the U.S. as ‘responsible,’ also implicitly, and sometimes explicitly, characterize them as more *able* to mitigate, adapt, aid, etc. This can reinforce disparities between the Global North and Global South. Urging depoliticization of climate change, on the grounds that it hinders the progress of climate action, fails to address, first, what kinds of action would be appropriate or desirable, and second, what whether climate change solutions can circumnavigate power asymmetries currently embedded in global relations. Claims that the Philippines is more vulnerable to climate change than the United States, are not necessarily false. I am not trying to ‘let us off the hook,’ so to speak, by implying that nations with the resources to do so have no responsibility whatsoever to mitigate their emissions or aid nations in adapting to climate change. This is merely another area in which metacritical debate is needed. Excavating this narrative suggests consequences of a discursive connection between climate change and extreme events that may outweigh its potential benefits. What is gained from this connection, emotive power, may come at great cost by perpetuating asymmetric power relations that constrain possibilities for holistic cooperation on global climate change solutions.

Imagining the End: Apocalyptic Anxieties in *Odds Against Tomorrow*

For another perspective on the connection between climate change and extreme weather, and one more focused on the public imaginary, I turn to fictional interpretation. In 2005, Michael Crichton, a prominent science fiction writer, was called to testify before the Senate Committee on Environment and Public Works.⁷⁹ His book, *State of Fear*, tells the story a group of “eco-terrorists” who plan mass-murder to raise awareness about climate change. Although a work of fiction, the book references actual climatological research and presents several graphs and figures. It received extensive criticism from scientists, and support from climate deniers. This is just one example of the power of fiction to galvanize debate about social and political issues.

Since the publication of *State of Fear* in 2004, there has been an explosion of novels incorporating climate change, whether as a background theme or a major plot feature. As recently as

⁷⁸ Adam Vaugh and Phil Maynard, *UN Climate Chief: Extreme Weather Reminds Us We Must Act on Climate Change*, 2014.; Adam Vaughan and John Vidal, “Extreme Weather Is ‘Silver Lining’ for Climate Action: Christiana Figueres,” *The Guardian*, March 5, 2014, sec. Environment.

⁷⁹ Michael Janofsky, “Michael Crichton, Novelist, Becomes Senate Witness,” *The New York Times*, September 29, 2005, sec. Books, <http://www.nytimes.com/2005/09/29/books/29cric.html>.

2005 it was observed that environmental disaster had yet to provoke much artistic response.⁸⁰ The term “cli-fi,” encompassing fiction either set in a climate changed world or centering on characters dealing with climate change themes, was popularized in 2007. The sudden expansion of the genre has not gone unnoticed. The New York Times, The Huffington Post, VICE, and NPR have all commented on the rise of climate change themes in literature, with many suggesting that such novels may hold sway over the public in a way that scientific information cannot.⁸¹ For many individuals stories, more so than facts, “have the power to transfix their audience with horror, to command attention and shock people out of a position of comfortable apathy, in a way that strict adherence to the data cannot even if the long-term implications of that data are terrifying enough in themselves.”⁸² Truth has power, but sometimes fiction may have even more.

Through an analysis *Odds Against Tomorrow* by Nathaniel Rich, I argue that both climate change and extreme weather discourse are characterized by risk and uncertainty. To draw out the implications of how this connection is represented I focus on the story’s main characters in the context of their responses to an extreme weather event, as well as the themes of utopianism/dystopianism and apocalypticism. I argue that the main responses to cataclysm presented in this novel are denial, rejection of the dominant paradigm, and paralysis or inaction, which can also be understood in the context of uncertainty, risk, and the fear of death and the end of the world.

The end may come in fire or in flood, and some don’t believe that it will come at all. In *Odds Against Tomorrow* by Nathaniel Rich the reader is presented with different way of coping with apocalypse. I argue that in this novel, apocalyptic anxiety can be understood as analogous to the fear of death. By understanding disaster, or more dramatically, the apocalypse, as a sort of collective death, I use *Odds Against Tomorrow* to evaluate potential responses to impending

⁸⁰ Rowland Hughes and Pat Wheeler, “Introduction: Eco-Dystopias: Nature and the Dystopian Imagination,” *Critical Survey* 25, no. 2 (June 1, 2013): 1–6, doi:10.3167/cs.2013.250201.

⁸¹ Bernie Bulkin, “‘Cli-Fi’: One Answer to a Climate Problem?,” *Huffington Post*, November 1, 2013, http://www.huffingtonpost.com/bernie-bulkin/cli-fi-one-answer-to-a-climate-problem_b_4179177.html; Angela Evancie, “So Hot Right Now: Has Climate Change Created A New Literary Genre?,” *NPR.org*, accessed January 25, 2014, <http://www.npr.org/2013/04/20/176713022/so-hot-right-now-has-climate-change-created-a-new-literary-genre>; Anne C. Mulkern, “Will Prize-Winning Novels Shift Attitudes on Global Warming?,” *The New York Times*, May 6, 2011, sec. Business Day / Energy & Environment, <http://www.nytimes.com/gwire/2011/05/06/06greenwire-will-prize-winning-novels-shift-attitudes-on-g-65686.html>.

⁸² Hughes, Rowland, and Pat Wheeler. “Introduction: Eco-Dystopias: Nature and the Dystopian Imagination.” *Critical Survey* 25, no. 2 (June 1, 2013): 1–6. doi:10.3167/cs.2013.250201.

climatic doom.

I chose *Odds Against Tomorrow* for this analysis, because it does not explicitly mention climate change. By subverting the dominant vocabulary of climate discourse, Rich is free to discuss related themes of denial, death, and risk without committing the novel to a particular agenda. This is in contrast to books like Michael Crichton's *State of Fear*, or Barbara Kingsolver's *Flight Behavior*, which express explicit views on climate change and present some as preferable to others.

The book begins with disaster. When an earthquake in Seattle ruptures an otherwise unremarkable day of college classes, the impact is so great it is considered a defining facet of the identity of that generation; 'Generation Seattle'. However, protagonist Mitchell Zukor is strangely calm, almost as though he saw it coming. Rich uses a framing device such that the novel's introduction is narrated as a first person account from the perspective of one of Mitchell's college friends. It reads like the introduction to a biography, a biography written by someone who knew Mitchell, if not extremely well, at least at "a crucial stage in his development."⁸³

Mitchell is described as "flagrantly rust belt," with "an eccentric, brooding manner and a depressive sense of humor."⁸⁴ A mathematical genius, Mitchell is obsessed with worst-case scenarios. Although he claims that his calculations are only logic games, in fact he exists in a constant state of terror. On a near-nightly basis he "raced out of his bedroom in a panic, cheeks flushed, eyes haunted. He flipped on his desk lamp, pounded numbers into his calculator, and scrawled equations and odds ratios ... The next morning we'd find him there asleep, face-down on his papers, his cheek ink stained with numbers like a prison tattoo."⁸⁵

When the earthquake occurs, the narrator claims he felt as though he were in one of Mitchell's nightmares. He was. Everyone was. Everyone, that is, except Mitchell himself, who had the wherewithal to assist Elsa Bruner, a fainting girl with a life-threatening heart condition. Without his intervention, and the immediate medical attention that followed, she may have died.

Elsa reaches out to Mitchell later, after he graduates and takes a financial consulting job

⁸³ Nathaniel Rich, *Odds Against Tomorrow : [a Novel]*, 1st ed.. (New York: Farrar, Straus and Giroux, 2013). 12

⁸⁴ Rich, *Odds Against Tomorrow*. 4

⁸⁵ *Ibid.* 3.

in New York. Mitchell receives a letter at work (sure to contain “a bomb, or at least superfine toxic dust” pg 32), in which Elsa thanks him for his help during the earthquake and details her efforts to establish a communal farm at an old summer camp in Maine. Mitchell is baffled, not only by this exchange, but by Elsa’s life choices. She seems oblivious to the risks of her medical condition, entirely unconcerned about her impending doom. They continue to exchange letters throughout Part I of the novel. They write one another so often, not even waiting for a reply before sending another, that they have more than one conversation at a time. But this intimacy is limited. Elsa points out that they “read each others thoughts but never hear each others voices,” highlighting that, despite their closeness, they are quite distant from one another.

The ramifications of the Seattle earthquake were financial as well. Corporate enterprises suffered huge losses, when the families of earthquake victims filed lawsuits against them, “that uniquely American mourning ritual.”⁸⁶ The course of Mitchell’s life is particularly affected by the resulting panic in the financial world. At his first job, for the nebulous corporation “Fitzsimmons Sherman,” Mitchell is tasked with estimating the company’s financial losses in the event of catastrophe; essentially, to calculate the value of the life of every single employee. It is on the eve of completing this task that he is courted by Alec Charnoble of FutureWorld.

Charnoble intends to use disaster to his advantage. As he explains to Mitchell, “when, after 2001, insurance firms stopped providing catastrophe coverage, a void was created in the market. We plan to fill that void.”⁸⁷ After the Seattle earthquake a doctrine of limited liability was tacked onto a routine New York gubernatorial public funds bill. Under this doctrine almost any property owner in the state is protected from suits being brought against them in the event of a catastrophe as long as they can claim to have made a reasonable, good faith effort to be prepared for disaster (by, for example, having FutureWorld on retainer.) As Charnoble puts it, “[we] protect our clients ... [the] statute protects us. And the good senator from the Twenty-fifth District will not have to worry about fundraising this year. Everyone wins.”⁸⁸ But, Charnoble needs Mitchell. Mitchell, unlike Charnoble, believes in the worst-case scenarios. He can sell the fear. It’s easy “to scare people during hard times ... The challenge is to scare them

⁸⁶ Rich, *Odds against Tomorrow*. 14.

⁸⁷ *Ibid.* 27.

⁸⁸ *Ibid.* 29.

during the hopeful times, in the lulls between catastrophic events, when FutureWorld's services start to seem like a luxury."⁸⁹ Mitchell, with his disheveled appearance and haunted eyes, is a natural at it. So, Mitchell becomes a futurist.

FutureWorld grows. Mitchell sells fear of the future to a growing list of clients. His scenarios span everything from earthquakes and tsunamis, to global pandemics of infectious disease, to conflict with China, and even the biblical End of Days. As the company expands they acquire a new futurist, Jane Eppler. Fresh out of business school, Jane turns to Mitchell as a sort of mentor. Unlike Mitchell, Jane doesn't actually believe in the worst-case scenarios, she calls them "hilarious," but it is this dark humor that makes her so good at her job. Her blasé attitude, her casual, familiar way of discussing the end of the world, is almost more terrifying than Mitchell's passionate urgency. The two develop a relaxed camaraderie, bonded by their dark humor, shared love of mathematics, and the strangeness of selling fear and unease to others. "FutureWorld: at the end of the tunnel, more tunnel," and "FutureWorld: in the darkness of the storm, a ray of ... darkness" are some of the slogans they facetiously advance for the company.

Mitchell's routine of letters from Elsa, jokes with Jane, and working for Charnoble as a "necromancer" does not last long however. In the midst of a terrible drought (during which, FutureWorld is doing very well, of course), Mitchell stops receiving letters. She suffered another attack of Brugada, and is in no condition to write. Learning of this sends Mitchell even further into his own head, where he immerses himself completely in disaster scenarios.

When the fictional Hurricane Tammy hits New York City, Mitchell's scenarios help to save the lives of many of his clients. Ironically however, it is Mitchell and his partner Jane who fail to evacuate. Temporarily trapped in the flooded ruins of the city, they embark on a terrifying canoe journey to find food, shelter, and other refugees. Their experiences traveling through the city and living in a FEMA refugee camp highlight various human responses to tragedy. They also encounter Mitchell's growing fame as the man who predicted the hurricane. From looting and other petty crimes to treating Mitchell as a prophet, people attempt to cope with the unexpected. Mitchell however, someone who has always expected the worst, is oddly freed by

⁸⁹ Ibid. 31.

the experience. Although his reputation could have put him at the forefront of the future consulting industry, along with Jane, he abandons New York City to eke out a meager existence on land abandoned by hurricane victims. At this point he is convinced that Elsa is dead (we learn later that she isn't).

The incongruity between the respective personalities of Mitchell and Elsa exemplify discursive stagnation. Elsa acts oblivious to risk, and Mitchell is overly consumed by them. In their exchange of letters, neither seems to understand the perspective of the other, although, as Mitchell notes, they each “had something the other one needed.” Mitchell craves Elsa’s freedom from fear of death, and suspects that what she wants from him is exactly that, the fear that is, for most of his life, his only motivation. This aside, the denialist and the alarmist can only talk past each other

Jane’s character provides a counterpoint to Mitchell and Elsa. Mitchell and Elsa are somewhat unrelatable characters; Elsa because she is almost too cliché, both because of her carefree, quirky personality, and her decisions to ‘withdraw from society’ to start a communal farm with family money, and Mitchell because he is too foreign, his anxiety so exaggerated as to be unrealistic.

Discussion of Results

Throughout this thesis I have problematized media representation of the connection between climate change and extreme weather. Specifically, the presentation of this connection is frequently characterized by vulnerability discourse. Vulnerability discourse reinforces the dependency of the Global South, as well as marginalized groups within the Global North, excluding them from potentially transformative conversation about climate solutions as well as creating a narrative of guilt and sin directed at the Global North and th. There is need for critical discussion of the ways in which the discourses of climate change and natural disasters are being connected. The responses to risk, fear, and uncertainty depicted in *Odds Against Tomorrow* are not presented as solutions, suggesting that this narrative may be promoting discursive stagnation rather than development of creative approaches to change.

A change in the weather is sufficient to recreate the world and ourselves.

~ Marcel Proust

Conclusion and Broader Implications

An oft-repeated trope in the ongoing story of climate change is that people don't react to something unless it's right in front of them. Because climate change is a global phenomena happening over large distances and long timescales, it is not prioritized by the public. By that logic, if climate change is perceived as more immediate, then it will be given more attention as a public issue.

Heat waves and hurricanes, floods and tornadoes are present immediately. Through a content analysis of newspapers around the world, I have shown that media attention to extreme weather events has increasingly connected these events to climate change in recent years. This connection has the potential to motivate climate action at both the individual and policy levels by increasing the salience of climate change in the public imagination.

The lack of comprehensive response to climate change suggests that media attention or scientific information about climate change is not enough. There remains a gap between what is known about climate change and what is prepared for both institutionally and individually.⁹⁰ The connection between climate change and extreme weather may be one way of closing that gap. But problems remain. Demonstrating that there is a connection doesn't say anything about what that connection is or its implications for the future of climate discourse. I have also attempted to interrogate the nature of this connection, what stories are being told about and through it.

I argue that three dominant narratives emerge in the connection between climate change and extreme weather: a narrative of guilt and innocence, a narrative of denial and/or skepticism, and a narrative of apocalypticism and utopianism.

- guilt narrative can actually reinforce the dependence of those affected by extreme weather and contribute to the construction of subordinate identities
- denial/skepticism is obviously stagnating, can directly encourage persistent inaction by leading to protracted debate
- apocalypticism can both contribute to denialism and motivate people to try and create a better place, invoking the utopian impulse. However, utopian ideals can also be exclusive/nostalgic (i.e. primitivism)

Despite the potential motivating power of extreme weather being causally linked to climate change in public discourse, the narratives discussed above are examples of ways in which this discourse may be problematic.

The earth is a highly complex system and climate modeling is still a very young science. Our knowledge of the earth system is changing all the time. This complexity and uncertainty allow for a proliferation of narratives, a plethora of debate, not only about how to respond to climate change but about what the causes and effects of climate change even are. More knowledge is definitely needed, but not just any knowledge. The unbridled search for truth yields little more than an incoherent mess. To make sense of climate change, the human role in it, and what actions to take in the future, requires more than information. There remains need for metacritical debate as to the standards that climate science should be held to. Current climate discourse concerns what to do, without first answering questions of what information to trust. In the places where science is a key part of policy-making, policy makers must at least start out on the same page, something that has not happened in climate change politics.

This is not just an issue for climate science, but for any scientific issue with direct societal ramifications. In such cases, some argue that we must ‘let the chips fall where they may.’ We should base our decisions on whatever science tells us is correct. This position ignores two crucial aspects of scientific knowledge. First, science is typically not prescriptive. For example, the statement that sea level is likely to rise by x number of meters over the next century, says nothing about what the appropriate response to sea level rise is. For many people, the statement likely warrants that *something* must be done, but what? There are many questions that science cannot answer. Second, chips don’t fall in a vacuum. Where the chips land, what the chips even are, will be interpreted differently pursuant to the concerns, aims, and agendas of the interpreter. Knowledge is produced or constructed in a context that contains what that knowledge will be. But just because knowledge is constructed doesn’t mean that some ways of constructing it aren’t better than others. Connecting climate change to extreme weather events is one way that climate change can be constructed in the public imagination. In this thesis I have demonstrated ways that this narrative has other less clear or intended effects, which may help to reinforce rather than deconstruct ways of thinking that detract from long-term goals for climate change mitigation and adaptation. In particular, they can perpetuate asymmetric power relations between Global North and South through vulnerability discourse, promote unreflective engagement with climate issues,

urging pragmatic action when the grounds for such action remain unstable, and fail to contribute to creative approaches to risk and uncertainty. Without metacritical debate establishing rigorous standards for engagement with climate change we risk wallowing in a discursive quagmire. But, if we take a step back, we will find ourselves on firmer ground.

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