# 28

# FRAMING, THE MEDIA, AND ENVIRONMENTAL COMMUNICATION

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## Introduction

Framing as an area of research spans several scholarly disciplines. Frames as they appear in pub-lic debate and media coverage are interpretive storylines that set a specific train of thought in motion, communicating why an issue or decision matters, who or what might be responsible, and which political options or actions should be considered over others (Nisbet 2009a; Nisbet and Scheufele 2009). Framing an issue is also an important exercise in power (see Hansen 2011). By defining the terms of debate, groups and advocates can influence the amount of attention an issue receives, the arguments or considerations that are considered legitimate or out of bounds, and the voices who have standing to express their opinion or participate in decisions (Nisbet and Huge 2006; 2007).

There is no such thing as unframed information, and many readers of this chapter by way of their conversations, social media use or other interactions are already effective at framing their opinions and positions, whether using frames intentionally or intuitively. Framing, it should be noted, is not synonymous with placing a false spin on an issue, although some communica-tors do purposively distort evidence and facts. Rather, in an attempt to remain true to what is conventionally known about a complex topic, as a communication necessity, framing can be used to pare down information, giving greater weight to certain considerations and elements over others (Nisbet 2009b).

For these reasons, if scholars, professionals, and citizens are to effectively evaluate and/or participate in environmental debates, they will need to apply an understanding of framing as a cognitive, social, and political process. Members of the public rely on frames to make sense of and discuss complex environmental issues; journalists use frames to craft interesting and appeal-ing news reports; policymakers apply frames to define policy options and reach decisions; and experts employ frames to simplify technical details and make them persuasive (Nisbet 2009a; Scheufele 1999).

In this regard, relative to the field of environmental communication, as Hansen (2011) has called for, research on framing provides an invaluable set of theoretical and methodological approaches for evaluating the factors that motivate social movements and protest; that influ-ence the actions of political leaders and groups; that shape news coverage and patterns of attention; and that affect policy decisions and public opinion.

In this chapter, we begin by reviewing the role of framing at the macro-level as it relates to various social movement and advocacy strategies, the social construction of controversies such

as those over nuclear energy, climate change, and food biotechnology, and the significance to political decision making. In doing so, we describe a generalizable typology of frames that can be applied to studying the social and political development of environmental debates and technology controversies as they play out in media coverage and public discourse. In the second section, we review research evaluating how the frames of reference found in media coverage and political debate resonate with and selectively activate individual mental models and cognitive "schema," thereby influencing public opinion. We also discuss examples of how this research is being applied to the design of effective public engagement campaigns on climate change. To conclude the chapter, we briefly review new directions for framing research in environmental communication, highlighting the relevance of work on cultural cognition and moral foundations theory; as well as "Big Data" methods for evaluating social media discussion and discourse.

## Frame contests and environmental politics

In evaluating the factors influencing social movement strategies, media coverage, and political decisions, many framing scholars have followed the lead of sociologist William Gamson, adopting a "social constructivist" approach. According to this line of research, in order to make sense of political issues, citizens as resources the frames available in media coverage, but integrate these packages with their own mental frames of reference forged by way of personal experience and conversations with others.

Media frames might help set the terms of the debate among political actors and the public, but rarely, if ever, do they exclusively determine public opinion. Instead, as part of a "frame contest," one interpretative package might gain influence because it resonates with popular culture or a series of events; fits with media routines or practices; and/or is heavily sponsored by powerful political actors (Gamson and Modigliani 1989; Gamson 1992; Price, Nir, and Capella 2005; Nisbet 2009a).

The framing of an environmental issue can also influence broader public attention while also shaping the "scope of participation" in a political debate (defined as the types and numbers of groups who are involved in policy making). In fact, across the history of many policy debates, power has turned on the ability to not only control attention to an issue within policy contexts or in the media, but also to simultaneously frame the nature of the problem and what should be done (Hansen 2011; Nisbet and Huge 2006; 2007).

If a group or coalition is favored by the status quo in environmental policy making, it is in their best interest to frame issues in highly technical, scientific, or legalistic ways and to downplay possible risks, since these interpretations tend to deflect wider news attention, and attract only narrow constituencies (Nisbet and Huge 2006; 2007, see also Schlichting 2013). Under these conditions, journalists lack the dramatic grist to produce coverage of an issue on an ongoing basis, meaning that overall news attention will remain low and sporadic (Nisbet and Huge 2006; 2007).

But, on the other hand, if a group or coalition is disadvantaged by the status quo in policy making, it is usually in their best interest to reframe an environmental issue in terms of dramatic risks/costs and in moral ways. These interpretations are more likely to shift decision making from regulatory arenas such as the Environmental Protection Agency (EPA) or the Food and Drug Administration (FDA) to overtly political contexts such as Congress or the White House, where arguments emphasizing dramatic risks and morality have more sway. Under these conditions, it becomes potentially easier to mobilize a more diverse coalition of groups to challenge the status quo, to generate widespread media coverage, and to influence broader public opinion (Nisbet and Huge 2006; 2007, see also Cox 2010; Hestres 2013).

### *Shifting the debate over food biotech*

Consider the example of food biotechnology. Previous research has attempted to understand why the issue until recently has experienced relatively limited media and public attention in the U.S., especially in comparison to that in the United Kingdom and several European countries (Gaskell, Bauer, Durant and Allum 1999). A major reason is that the biotech industry and scientists have been successful at limiting the scope of participation, as early policy decisions framed the issue around the technical aspects of scientific review and patenting rules. This ability to frame the terms of the debate and to limit the scope of attention and participation helped establish a virtual policy monopoly within regulatory policy arenas such as the FDA and EPA with very little attention from Congress or the White House or beyond the science and business beats at newspapers or other media outlets (Nisbet and Huge 2006; 2007).

Though increased media attention to plant biotechnology and more dramatic definitions of the issue have surfaced in recent years, challenging the status quo in U.S. regulation, the ability of the biotech industry and allies in early policy decisions to frame the debate around short-term environmental and health risks has led to lasting and powerful feedback effects. The early success of biotech proponents in defining the terms of the debate is attributable in part to minimal media coverage, which made precedent setting 1990s market approvals of genetically modified crops essentially 'non-decisions' for the wider public (Nisbet and Huge 2006; 2007).

This is in contrast to the UK and Europe, where from the beginning, there was a much wider scope of participation in policy decisions. The early inclusion of environmental, consumer, and labor groups, and the comparatively stronger framing of the issue in terms of transparency and public accountability, led to a very different European regulatory regime that took into account social and economic factors as well as the possibility of unknown future technical risks (Nisbet and Huge 2006; 2007; Listerman 2010).

Yet in the U.S. there are signs that the scope of participation and framing of the issue may be shifting. Critics of food biotechnology have helped expand and intensify public opposition to food biotechnology even as overall national news attention has remained low. Critics have done so by framing the issue in the context of parallel food system debates, broader consumer trends, and by taking advantage of the diffusion of online media strategies and favorable media outlets. These trends include public interest in localized economies and "buy local" efforts, as well as an idealization of "natural" and organic over conventional and industrial food production. Moreover, these trends have not only been popularized by advocates and social entrepreneurs, but also by way of the dramatic growth online in progressive media outlets such as Mother Jones or Grist.org and by documentary film campaigns such as Food Inc., with articles or video excerpts widely shared and diffused by advocates via social media.

### *A generalizable typology of frames across environmental debates*

For scholars and professionals analyzing debates over the environment, identifying the relevant frames as they appear and spread can be approached deductively. Drawing on previous work, studies usually work from a set of generalizable frames that appear to reoccur across policy debates and that tend to organize our thinking and conversations about the social implications of science, technology, the economy, and politics as they relate to the environment. Originally identified by Gamson and Modigliani (1989) in a study of nuclear energy, the typology of cultural frames was further adapted in studies of biotechnology in Europe and the United States (Durant, Bauer and Gaskell 1998; Dahinden 2002; Nisbet and Lewenstein 2002), and in analysis of the debate over climate change (Nisbet 2009a). In these past studies, researchers

have explored the frames available in the media via the qualitative and quantitative analysis of text-based media representations of environmental issues. More recently, scholars have also evaluated how visual images of climate change featured in media reports and advocacy strategies selectively define risks, and attribute responsibility and courses of action (Hansen and Machin 2008; O'Neill, Boykoff, Niemeyer and Day 2013; O'Neill 2013; Meisner and Takahashi 2013; O'Neill and Smith 2014).

Even as researchers have shown that specific frames of reference about climate change in news coverage and political discourse differ by country and culture (see Dirikx and Gelders 2010; Gordon, Deines and Havice 2010; Nerlich, Forsyth and Clarke 2012; Takahashi and Meisner 2012; Zamith, Pinto and Villar 2012; Dotson, Jacobson, Kaid and Carlton 2012), and with respect to various energy policies or technological solutions (see Bickerstaff, Lorenzoni, Pidgeon, Poortinga and Simmons 2008; Stephens, Rand and Melnick 2009; Feldpausch-Parker et al. 2013), the findings of these studies tend to support a generalizable set of meanings that advocates, political leaders, and journalists tend to draw from across country setting and time.

These frames include:

- social progress: At stake is improving quality of life, or finding solutions to problems. Alternative interpretation is progress defined as living in harmony with nature instead of mastery, "sustainability," "balance," "quality of life";
- economic development/competitiveness: At issue is economic growth and investment, market benefits or risks; protecting local, national, or global competitiveness;
- morality/ethics: The issue is fundamentally a matter of right or wrong; respecting or crossing religious, ethical or "natural" limits, thresholds, or boundaries; and/or working towards justice for those who have been harmed;
- scientific/technical uncertainty: The issue or decision is a matter of expert understanding; what is known versus unknown; arguments either invoke or challenge expert consensus, call on the authority of "sound science," falsifiability, or peer-review to establish criteria for decisions;
- Pandora's box/runaway science/fatalism: Call for precaution in face of possible impacts or catastrophe. Defines problem or technology as out-of-control, a Frankenstein's monster, or as fatalistic, i.e., action is futile, the train has left the station, the path is chosen, no turning back;
- public accountability/governance: Is a decision or action in the public interest or serving private interests; emphasis on fairness, transparency, ownership, control including responsible use or abuse of expertise in decision-making, e.g. "politicization";
- middle way/alternative path: An issue or decision is about finding a possible compromise position, or a third way between conflicting/polarized views or options;
- conflict/strategy: At stake is a broader power game among elites; emphasizing who's ahead or behind in winning debate, in public opinion polling, or political spending. Emphasis is on the battle of personalities; or groups; the tactics and strategies involved and how they will "play politically" (usually journalist-driven interpretation.)

A few key details about this typology are worth noting. First, these frames serve as general organizing devices for public debate and should not be confused with specific policy positions. In other words, each frame can relate to pro, anti, and neutral arguments, though one set of advocates might more commonly activate one cultural schema over others. This distinction between frames and the valence of arguments becomes clearer after considering a few examples from the debate over food biotechnology.

In this debate, opponents of food biotechnology have defined the issue in terms of an idealized, pastoral vision of small-scale farms and the "natural," while also emphasizing fears of environmental contamination. These arguments frame food biotech in terms of social progress (specifically, living in harmony with nature rather than controlling it), relative to precaution in the face of scientific uncertainty; and relative to opening a Pandora's Box of "Frankenfoods" that are an "uncontrolled experiment" on nature and humans. Activists have also focused on the perceived inadequacy of regulation to ensure choice for farmers and consumers who have a "right to know" through labeling, emphasizing fairness, transparency, and equity. This line of argumentation frames food biotech in terms of public accountability, particularly science serving the public interest rather than the interests of biotech companies.

Industry and other proponents have countered by emphasizing via media reports and advertising the value of food biotechnology to meet world food demand in an era of climate change and growing population. This argument about food biotech frames the issue in terms of social progress, but emphasizes science and technology as a tool for mastering nature's adverse risks and as solving problems. Proponents have also strongly criticized anti-biotech activists for destroying crops and research installations, for promoting misinformation, and for generating unfounded public fears. This line of argumentation frames food biotech in terms of public accountability, emphasizing the pollution of science by the ideologically motivated actions of activists.

In each of the above examples, specific frames are also often efficiently translated and conveyed by way of "frame devices." These triggers of various interpretative packages include catch phrases (e.g. "Frankenfood," "right to know,"), metaphors (e.g. comparing food biotech to "playing God in the Garden" or "uncontrolled experiments," symbolic of runaway science), and visuals (e.g. an industry advertisement featuring an African farmer standing in an abundant field of crops, symbolic of social progress) (see also Hansen 2006; Maeseele 2010 for further discussion).

## Framing effects on public opinion

With limited time and ability to process complex information, as we move through our daily lives trying to make sense of a constant flow of ambiguous signals, situations, and choices, we are heavily dependent on shifting cues that set the context for our perceptions. In this regard, both as a communication necessity and as a persuasion strategy, when experts, advocates, or journalists "frame" a complex environmental issue, they differentially emphasize specific cues relative to that complex issue, endowing certain dimensions with greater apparent relevance than they would have under an alternative frame (Scheufele 1999; Nisbet 2009a; Scheufele and Scheufele 2010). Depending on our own existing mental models about an issue and more generalizable schema about how the world should work, we are more inclined to pay attention to and accept some of these frames of reference over others, reinforcing and influencing our judgments and opinions.

For example, is climate change a grave environmental risk to animal species and ecosystems that requires regulation of industry to solve, or is it a public health threat to children and the elderly that requires government investment in clean energy technology? Both frames are essentially equivalent in accurately depicting the nature of the issue, though emphasizing different attributions about what is at stake and the possible courses of action. In the first context or "frame," the emphasis is on the risks to the environment, protecting nature from harm and the need to limit industry. In the second frame, the emphasis is on the risks to humans, protecting vulnerable people from harm, and the need to aid industry through government funding of

technological innovation. Depending on our point of view and social outlook, we are likely to be more open to one of these accounts over the other in determining the relevance of climate change and what should be done.

As mental models and organizing devices for communication, frames set the context for perception and discussion by selectively activating different cognitive and affective schema (Marx et al. 2007). If frames are the software by which we navigate the complexity of risks and choices posed by a problem such as climate change, then cognitive and moral "schema" provide a deeper mental architecture, defining for us core concepts, such as the relationship between science and society, or the government and the economy. Schema can also be value constructs and moral intuitions that guide evaluations of personal behavior and societal choices, such as a desire to protect Nature from harm, or to defend our communities from health threats. Once activated, schema provide short cuts for reaching an opinion about a complex topic, serving as a basis for inference, and operating as a mechanism for storing and retrieving information from memory (Scheufele and Scheufele 2010; Nisbet and Markowitz 2014).

In sum then, media and other discursive frames influence our judgments of complex policy debates when they are relevant—or "applicable"—to an individual's specific existing interpretive schema. Framing effects will vary in strength as a partial function of the fit between the schemas a frame suggests should be applied to an issue and the presence of those schemas within a particular audience (Scheufele and Tewksbury 2007).

In other words, media frames influence public perceptions of environmental problems by connecting the mental dots for the public. They suggest a connection between two concepts, issues, or things, such that after exposure to the framed message, audiences accept or are at least aware of the connection. Alternatively, if a frame draws connections that are not relevant to something a segment of the public already values or understands, then the message is likely to be ignored or to lack personal significance (Scheufele and Tewksbury 2007; Nisbet 2009a).

### *Framing and public engagement on climate change*

Recent work in the U.S. has begun to apply the different streams of framing research reviewed so far – from the cultural and social to the cognitive – in order to better understand the types of investments that might motivate and enable increased public participation in decision making related to climate change. This includes efforts to protect and prepare communities against current climate change-related risks and to mitigate those risks over the long term. The work offers a useful model—and raises important implications—for thinking about the effects of framing on public opinion and the applications across environmental problems.

At its core, the research relies on identifying and mapping distinct "interpretative communities" of Americans, improving our understanding of why different segments of the public accept or reject certain arguments, risks, and dimensions of the climate debate (Leiserowitz 2007). An interpretative community is a group of individuals who share common risk perceptions about climate change, reflect shared schema, mental models, and frames of reference, and hold a common sociodemographic background. Not only do these interpretative communities share a common worldview, but the fragmented nature of the media system also helps reinforce, define, and shape a common shared outlook relative to climate change (see Roser-Renouf et al., Chapter 31, this volume, for additional discussion).

In a series of studies by Maibach, Nisbet and colleagues, we investigated how a diversity of Americans understand the health and security risks of climate change and how they react to information about climate change when it is framed in terms of these alternative dimensions. In this research funded by the Robert Wood Johnson Foundation, our goal was to inform the

work of public health professionals, municipal managers and planners, and other trusted civic leaders as they seek to engage broader publics on the health and security risks posed by climate change (see Weathers, Maibach, and Nisbet 2013; Nisbet 2014 for overviews).

Framing climate change in terms of public health stresses climate change's potential to increase the incidence of infectious diseases, asthma, allergies, heat stroke, and other salient health problems, especially among the most vulnerable populations: the elderly and children. In the process, the public health frame makes climate change personally relevant to new audiences by connecting the issue to health problems that are already familiar and perceived as important. The frame also shifts the geographic location of impacts, replacing visuals of remote Arctic regions, animals, and peoples with more socially proximate neighbors and places across local communities and cities. Coverage at local television news outlets and specialized urban media is also generated (Nisbet 2009a; Weathers et al. 2013).

Efforts to protect and defend people and communities are also easily localized. State and municipal governments have greater control, responsibility, and authority over climate change adaptation-related policy actions. In addition, recruiting Americans to protect their neighbors and defend their communities against climate impacts naturally lends itself to forms of civic participation and community volunteering. In these cases, because of the localization of the issue and the non-political nature of participation, barriers related to polarization may be more easily overcome and a diversity of organizations can work on the issue without being labeled as "advocates," "activists," or "environmentalists." Moreover, once community members from differing political backgrounds join together to achieve a broadly inspiring goal such as protecting people and a local way of life, then the networks of trust and collaboration formed can be used to move this diverse segment toward cooperation in pursuit of national policy goals (Nisbet, Markowitz and Kotcher 2012; Weathers et al. 2013).

To test these assumptions, in an initial study, we conducted in-depth interviews with 70 respondents from 29 states, recruiting subjects from six previously defined audience segments. These segments ranged in a continuum from those individuals deeply alarmed by climate change to those who were deeply dismissive of the problem. Across all six audience segments, individuals said that information about the health implications of climate change was both useful and compelling, particularly when locally focused mitigation and adaptation-related actions were paired with specific benefits to public health (Maibach, Nisbet, Baldwin, Akerlof and Diao 2010).

In a follow up study, we conducted a nationally representative Web survey in which respondents from each of the six audience segments were randomly assigned to three different experimental conditions, allowing us to evaluate their emotional reactions to strategically framed messages about climate change. Though people in the various audience segments reacted differently to some of the messages, in general, framing climate change in terms of public health generated more hope and less anger than framed messages that defined climate change in terms of either national security or environmental threats. Somewhat surprisingly, our findings also indicated that the national security frame could "boomerang" among audience segments already doubtful or dismissive of the issue, eliciting unintended feelings of anger (Myers, Nisbet, Maibach and Leiserowitz 2012).

In a third study, we examined how Americans perceived the risks posed by a major spike in fossil fuel energy prices. According to our analysis of national survey data, approximately half of American adults believe that our health is at risk from major shifts in fossil fuel prices and availability. Moreover, this belief was widely shared among people of different political ideologies and was strongly held even among individuals otherwise dismissive of climate change. Our findings suggest that many Americans would find relevant and useful communication efforts that emphasized energy resilience strategies that reduce demand for fossil fuels, thereby limiting

greenhouse emissions and preparing communities for fuel shortages or price spikes. Examples include improving home heating and automobile fuel efficiency, increasing the availability and affordability of public transportation, and investing in government-sponsored research on cleaner, more efficient energy technologies (Nisbet, Maibach and Leiserowitz 2011).

## New directions for research

Two prominent lines of interdisciplinary research offer deductive typologies of schema that are likely to be generalizable across environment-related policy debates, shaping individual judgments and decisions as they are selectively activated by competing media and other discursive frames. Environmental communication scholars can benefit by integrating these important lines of research into assessments of media framing and their effects on public opinion, while also turning to more systematically analyzing how social and cognitive framing processes play out across online and social media.

### *Cultural cognition and moral intuitions*

In research on "cultural cognition" led by Yale University's Dan Kahan and colleagues, individuals scoring high in terms of hierarchical and individualist values tend to reject the risks related to issues such as climate change, nuclear energy, and food biotechnology. Hierarchicalists view proposed regulations to limit such risks as threats to those they respect in power, to established order in society, and to status quo practices in the economy or their personal lives. Individualists, alternatively, view regulatory actions as unwise restrictions on markets, enterprise, and personal freedom. In contrast, for individuals scoring high in terms of egalitarian and communitarian values, such arguments for regulation align easily with more generalized views about the need to manage markets and industry in favor of the collective community and to protect the most vulnerable (Leiserowitz 2006; Kahan, Jenkins-Smith and Braman 2010a).

Yet consider what happens when the frame of reference for these groups is shifted. In experiments, when hierarchicalists/individualists read that the solution to climate change was not regulations to limit emissions but investment in more nuclear power, their skepticism of expert statements relative to climate change decreased and their support for policy responses increased (Kahan et al. 2010a)

For environmental communication scholars, a major implication is that effective public engagement on climate change—no matter how effectively the science might be conveyed—will depend in part on the context set by proposed policy frameworks and technological solutions. Some actions such as tax incentives for nuclear energy, government support for clean energy research, or proposals to defend and protect local communities against climate change impacts are more likely to gain support from hierarchalists/individualists, segments of the public who lean toward strongly conservative in their political outlook. In this context, conservatives have less motivation to contest the risks identified by climate science since the proposed actions to deal with those risks affirm their schematic beliefs in the ability of human ingenuity to stretch environmental limits as well as maintain economic growth and the status quo in society.

Not only do political and technological solutions set the context and frame of reference for evaluating scientific advice about environmental risks and threats, but the perceived cultural similarity of those communicating about the problem also matters. This follows the longstanding finding that an individual's evaluation of the strength of an argument depends largely on how credible they find the source of that argument (Hovland and Weiss 1951; see also Druckman 2001).

For example, among hierarchalists/individualists, they are more likely to reject scientific information when it is conveyed by someone such as former Vice President Al Gore, whom they view as antagonistic and oppositional to their vision of a good society (Kahan et al. 2010a). On the other hand, they may be more open to the same scientific advice and policy recommendations when emphasized by a decorated military general. Similarly, egalitarians/ communitarians who tend to lean toward liberal in their political outlook would be more likely to dismiss assurances about the safety of food biotechnology from an industry-employed scientist than from a university-based and publicly funded researcher or alternatively from a local farmer who has benefited from the technology.

In relation to Kahan's Cultural Cognition line of research, environmental communication scholars can usefully build on this work by examining how culturally consistent or antagonistic cues are embedded within different frames of reference on issues such as climate change or food biotechnology. Strong cultural affiliation with the identity of experts or advocates may enhance or mitigate the persuasiveness of a particular frame of reference (see Kahan, Braman, Cohen, Gastil, and Slovic 2010b). For example, in relation to testing a public health framed message about climate change, to what extent do the cultural background and identity of the featured experts and those portrayed as at risk play in enhancing or mitigating the frame's effects across audience segments? For example, in a study testing the effects of a public health focused messaging strategy on climate change among residents of upstate New York, the more socially distant those at risk portrayed in the message (e.g. local state farmers versus European farmers), the more likely that Republicans were to dismiss the validity of the threat. In contrast, the social distance of the emphasized "victim" made little difference to the perceived risk perceptions of Democrats (Hart and Nisbet 2012).

Likewise, when evaluating frame contexts over climate change in media coverage, what are the culturally consistent and antagonistic cues differentially emphasized across conservative and liberal media? For example, how are frames of public accountability blaming conservatives for inaction on climate change as featured at the liberal cable network MSNBC further personalized and thereby made more resonant by referencing "deniers" such as Fox News, the libertarian Koch brothers, or U.S. Senator James Inhofe? Similarly, at Fox News, how are frames of reference emphasizing scientific uncertainty, economic costs, and public accountability further magnified and personalized by way of references, for example, to Al Gore, "Hollywood liberals," and the United Nations?

Moreover, in each case, what kinds of visual cues are also portrayed? Studies for example, suggest, that News Corp-owned news outlets tend to downplay the urgency of climate change by featuring imagery of political leaders; while in turn other news outlets play up the urgency of the issue by featuring iconic images of natural disasters and or melting glaciers and ice sheets (O'Neill and Smith, 2014). Other studies could examine, for example, when discussing solutions to climate change, the impacts of different technological images on public attitudes, ranging from "soft energy path" technologies such as solar and wind to "hard energy path" technologies such as nuclear power or carbon capture and storage.

A second line of research provides clues on how framing relates to the morally relevant schema and intuitions that are strongly held across different segments of the public. "Part of what it means to be a partisan is that you have acquired the right set of intuitive reactions to hundreds of words and phrases," explains New York University social psychologist Jonathon Haidt (2012) in his best-selling book, *The Righteous Mind: Why Good People Are Divided by Politics and Religion*. In his research with several colleagues, Haidt draws on surveys of tens of thousands of individuals to develop and validate a typology of commonly held "moral foundations," schematic interpretations of right and wrong that in political debates can be triggered by competing frames as found in media coverage and public discourse:

369

- harm/care – concerns about the caring for and protection of others;
- fairness/cheating – concerns about treating others fairly, upholding justice;
- loyalty/betrayal– concerns about group membership; loyalty;
- authority/subversion – concerns about legitimacy, leadership, and tradition;
- liberty/oppression– concerns about personal freedom and control by others;
- sanctity/degradation – concerns about purity, sanctity, and contamination.

According to Haidt's research, liberals tend to communicate about issues in ways that mostly activate the moral foundations of harm/care, liberty/oppression, and fairness/cheating. This reflects their own schematic lens on how they make sense of society. Conservatives, in contrast, tend to focus more strongly on moral intuitions related to loyalty/betrayal, authority/subversion, sanctity/degradation, and liberty ("live free or die"), while liberals tend to emphasize the opposing oppression ("speaking truth to power"). Similarly, when they emphasize fairness, conservatives tend to focus on process and perceived merit rather than on equality of outcomes (Haidt, 2012).

Consider how Haidt's typology of intuitive moral schema likely applies to climate change. Historically, advocates and their campaigns have framed the issue as an environmental problem that threatens ecosystems and wildlife, often in remote polar regions or other countries. This framing strategy activates the moral foundation of harm/care, though much of the focus is on harm to nature or the environment rather than humans, an interpretation uniquely persuasive to liberals (Feinberg and Willer 2013). Alternatively, in an effort to appeal more broadly to moderates and conservatives, environmental group campaigns in 2009 and 2010 supporting cap and trade legislation emphasized that a "cap=jobs" would "repower America." Though this emphasis promised economic benefits if legislation was passed, it did not activate a morally relevant schema for why we should act and why we have a responsibility to do so.

The emphasis on economic benefits in the context of the strong economic recession also turned the debate into "some economic benefits" as claimed by supporters of cap and trade versus "dramatic economic costs" as claimed by opponents, a balance that, given the economic context, favored the opposition. As a consequence, outside a committed base of environmentalists and progressive activists, during the cap and trade debate, most of the public lacked strong moral intuitions about climate change with appeals to participate lacking moral weight (see Nisbet et al. 2012 for analysis).

Environmental communication scholars can usefully build on and incorporate moral foundations research by examining a number of specific questions. First, how do these intuitive moral schema interact with and/or are activated by different framed messages? For example, does framing climate change as a public health problem have a broader appeal since it focuses on harm/care to humans rather than the environment? Similarly, in the debate over food biotechnology, how do different frames of reference promoted by environmentalists activate moral intuitions (and opposition to the technology) among liberals by activating moral intuitions related to the purity/sanctity of nature or by activating moral intuitions related to the fairness of food policy dictated by large corporations rather than consumers or small farmers?

### *The framing process across digital and social media*

Environmental communication scholars are also still struggling to catch up to the rapid changes in our media system and what they might mean for understanding framing effects. For example, in complex policy debates such as those over climate change and food biotechnology, the editorial and business decisions at prestige news outlets have likely indirectly amplified

differential risk perceptions across segments of the news audience. The *New York Times* and *Washington Post*, most notably, have cut back on news coverage of climate change and other science issues, letting go of many of their most experienced reporters, allowing advocacy-oriented media outlets and commentators to fill the information gap. As a consequence, careful reporting at outlets such as the *New York Times* on the technical details of science and policy have been replaced by morally framed interpretations from bloggers and advocacy journalists at other outlets that often dramatize and distort the risks related to these issues (Nisbet and Fahy 2015).

Online news and commentary are also highly socially contextualized, passed along and pre-selected by peers and opinion leaders who are likely to share an individual's worldviews and political preferences (Nisbet and Kotcher 2009). Furthermore, individuals are also more likely to assign greater utility and perceived benefit to news items that contain strong social endorsements (Messing and Westwood 2012). Nonetheless, if an individual incidentally "bumps" into news about climate change or food biotechnology by way of Twitter, Facebook, or Google+, the news item is likely to be the subject of meta-commentary that frames the political and moral relevance of the information (Scheufele and Nisbet 2012).

Taking advantage of these self-reinforcing spirals (see Garrett 2009), advocacy groups devote considerable resources to flooding social media with politically favorable comments and purposively selected stories, anticipating that many news consumers may incidentally "bump" into these comments and stories by way of their social media networks. Yet, some experimental evidence suggests that across certain science issues, such as genetically modified foods, individuals may be more likely to pay attention to information online that challenges rather than supports their pre-existing schema (Jang 2013). Nonetheless, this trend suggests that in today's social and participatory news system, many news consumers are potentially exposed to multiple frames of reference when engaging with a single news item. Even before engaging with the framing featured in a news story, today's news consumer is potentially exposed to the frame emphasized in the blog post, Tweet, or Facebook feed that called their attention to the news story. If after reading the story, the individual decides to read the comment section, additional framing effects may occur (Scheufele and Nisbet 2012; Anderson, Brossard, Scheufele, Xenos and Ladwig 2014).

Moreover, when individuals, prompted by a focusing event such as extreme weather or news of a major scientific report do seek out more information about climate change or food biotechnology via Google and other search engines, further selectivity is likely to occur. In this case, for example, liberals might choose to search for information on "climate change" or "frankenfoods" and encounter one set of differentially framed search results, whereas a conservative searching for information on "global warming" or "genetically modified food" encounters an entirely different set of search results. Not only does word choice shape the information returned through Google, but also so does the past browsing and search history of the individual, adding an additional layer of selectivity and bias to the information encountered (Baram-Tsabari and Segev 2011; Brossard 2013; Li, Anderson, Brossard and Scheufele 2014).

In assessing these trends, consumption patterns and possible effects, environmental communication scholars can learn from their peers among social and behavioral scientists as they experiment with "big data" analysis tools that can sample, capture, and code social media discussion of relevant topics. A next step in line with the research reviewed in this chapter is to analyze various social media statements and forms of expression by way of carefully developed and generalizable typologies of schema and frames. In this way, patterns of selectively framed discourse about a subject such as climate change or food biotechnology can be tracked in real time, by geographic location, and in relation to focusing events across online networks of groups and audience segments (Kirilenko and Stepchenkova 2014).

Environmental communication scholars, in this regard, can effectively work in tandem with behavioral scientists to design and run controlled experiments to test the effects of exposure to differentially framed social media conversations as they might be encountered online. This type of collaboration will likely benefit our overall understanding of the role of media framing in complex environmental debates while also fine-tuning the communication efforts of practitioners.

# Further reading

Brossard, D. (2013). New media landscapes and the science information consumer. *Proceedings of the National Academy of Sciences, 110 (Supplement 3), 14096–14101.*
Overview and synthesis of relevant research in science communication and risk communication specific to online information seeking and consumption that is applicable and suggests important areas of research for environmental communication.

Feinberg, M., and Willer, R. (2013). The moral foundations of environmental attitudes. *Psychological Science*, 24: 56–62.
Introduction to moral foundations theory, its relevance to environmental debates, and models for testing linkages to framing and public opinion formation.

Hoffman, A. (2012, Fall). Climate science as culture war. *Stanford Social Innovation Review*, 31–27.
Introduction to the relevance of cultural cognition and audience segmentation research to understanding differences in U.S. public opinion about climate change with recommendations on how framing strategies can bridge perceptual divide.

Nisbet, M. C. (2009a). Communicating climate change: Why frames matter to public engagement. *Environment*, 51 (2), 514–518.
Detailed overview of generalizable typology of frames and their relevance to understanding political debates over climate change.

O'Neill, S. J., and Smith, N. (2014). Climate change and visual imagery. *Wiley Interdisciplinary Reviews: Climate Change*, 5(1), 73–87.
Synthesis and review of research on the visual portrayal and framing of climate change, differences across media outlets and countries, and possible influence on public opinion.

Price, V., Nir, L. and, Capella, J. N. (2005). Framing public discussion of gay civil unions. *Public Opinion Quarterly*, 69, 179–212.
A comprehensive review and synthesis of research on social constructivist approaches to framing as developed by sociologist William Gamson and the applicability to evaluating relationship to individual-level opinion formation. Using the gay marriage debate as a test case, the study offers a useful framework for examining how media coverage reflects and shapes public discourse about climate change and other environmental issues.

Scheufele, D. A. (1999). Framing as a theory of media effects. *Journal of Communication*, 49(1), 103–122.
Synthesis of research and conceptualization of framing as a process that transcends "frame building" advocacy strategies, journalistic decision making, and audience schema and opinion formation.

372

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374

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