Effective Frames for Climate Change Communications

– How Environmental Communications Practitioners Can Engage The General Public –

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While there are still some who deny that climate change exists and that it is mostly a human-caused phenomenon, the majority of American climate scientists and citizens believe climate change is real and human behavior is the leading cause (Weart, 2011). The effects of climate change on human societies and the natural environment are numerous and include impacts on agriculture, human health, water resources, transportation, community infrastructure, natural ecosystems and even international relations (EPA; NASA).

As such, climate change is an important public policy issue that deserves more public engagement both in terms of influencing future policy and changing behaviors that will reduce the impacts of climate change (O'Neil & Nicholson-Cole, 2009). Research shows that while citizens are increasingly aware of climate change, they are not necessarily engaged in addressing it (Nisbet & Kotcher, 2009; O'Neill & Nicholson-Cole, 2009). In response, in recent years, much research has focused on to how to communicate about climate change in ways that motivate the public, as voters and consumers, to care about the issue and influence policy and purchasing decisions (Newman, Burton, Kozup & Tangari, 2012).

To date, public messaging, or "framing," has largely focused on the negative threats posed by climate change, which tend to make the public feel overwhelmed by, and not hopeful about, the situation (O'Neill & Nicholson-Cole, 2009). Environmental communications practitioners would do well to adopt new frames and related strategies that better capture the public's attention about, and engage citizens in, this issue. This literature review summarizes recent studies that highlight the most effective framing and related strategies for environmental communications practitioners to use. The final section provides an overview of best practices for practitioners, with specific attention paid to gain (positive) and loss (negative) frames, personal efficacy in addressing climate change, use of statistics, tying messaging to a specific natural place, and framing techniques used in social media.

Literature Review

A May 2009 article in the New York Times ("Seeking to Save the Planet, with a Thesaurus"), written by James Broder, sparked a public conversation and debate throughout the environmental community (and beyond) about effective communications strategies for engaging U.S. citizens in the issue of climate change (as cited in Perkowitz, 2010). One of the main points to emerge in the research literature from this discussion is "why frames matter" (Lakoff, 2010; Nisbet, 2010; Dan & Ihlen, 2011; Hart, 2011).

In a 2010 "Praxis Forum" hosted by *Environmental Communications*, which included articles addressing this specific climate change communications debate from three different perspectives, Lakoff explained that humans think "in terms of typically unconscious structures called 'frames' (sometimes 'schemas')," and argued that "successful social movements require the coherence provided by coherent framing" (Lakoff, 2010). Nisbet defined frames as "interpretative storylines that set a specific train of thought in motion" regarding the who, what, and why of an issue or problem (Nisbet, 2010). In their literature review of the topic, Dan & Ihlen highlighted the importance of framing in a public debate as they sought to identify what public relations communicators can do to enhance their ability to "win a framing contest" in the public media (Dan & Ihlen, 2011). Most of the twelve primary research papers covered in this literature review addressed framing in terms of gain and lost, or positive and negative frames.

One of the greatest challenges in communicating climate change is, as Morton et al., 2011 point out, how to reconcile the "different approaches to uncertainty among the public and climate change scientists." Generally speaking, the public is averse to uncertainty, and yet scientists are typically unwilling to provide any sense of certainty in their predictions about climate change as a way to stay true to "what they do, and do not, know" (Morton et al., 2011). Morton et al conducted two multiple regression questionnaire-based studies to test their prediction that a "two way interaction between level of uncertainty and framing on individual action in response to climate change messaging."

In the first study, eight-eight adults in the UK were recruited from a university mailing list, personal networks and social networks sites (30 males, 58 females, mean age of 27.24). On the website where they were directed, participants were randomly assigned to one of four questionnaire designs which tested the impact of framing (positive versus negative) and uncertainty (high versus low) on the participants' willingness to behave environmentally. After reading some statements about the likely impact of climate change, participants were asked to describe how likely they were to perform environmentally positive behaviors in the next month, based on a seven point scale from 'very unlikely' to 'very likely'. The researchers then conducted an ANOVA to address the participants' intentions to perform environmentally positive behaviors in the next month. The results found that there exists a "significant interaction effect between framing and uncertainty" ($p=.036$). The researchers found that in a negative frame, participants were more likely to act if the sense of uncertainty was lower; however, "in the positive framing condition, high uncertainty did not similarly undermine behavioral intentions relative to low uncertainty."

The second study addressed how feelings of efficacy to address climate change mediated concerns about uncertainty. One hundred and twenty UK university students (71 female, 48 male, 1 unidentified, mean age +21.1) were again randomly assigned to the same four designs (positive versus negative framing, and high versus low uncertainty), read similar information, and responded to the same question about behavioral intentions based on the same seven point scale as in Study #1. This study, however, had the added focus of measuring feelings of self-efficacy to address climate change. The same 2x2 ANOVA again showed a "significant interaction between framing and uncertainty" ($p=.009$). As with Study #1, a negative frame coupled with higher uncertainty resulted in reduced environmentally friendly behavioral intentions compared to lower uncertainty. Yet this difference was statistically insignificant ($p=.292$). On the other hand, for the positive frame, "high uncertainty was instead associated with stronger intentions to act pro-environmentally than low uncertainty" to a statistically significant degree ($p=.007$). Further, "when efficacy was included as a predictor of intentions, the previously significant interaction between framing and uncertainty was

substantially reduced," highlighting how the participants' sense of efficacy in addressing climate change mitigated issues of uncertainty.

Environmentally friendly behaviors was the focus of another paper titled *The influence of consumer concern about global climate change on framing effects for sustainability messages*." In a two-part study, Newman, Burton, Kozup and Tangari (2012) found that when concern about climate change is lower, framing effects are larger and negative framing with a prevention focus are more persuasive. The researchers initially conducted a pilot study with 504 respondents from a nationwide internet research panel to determine if there was an "adequate variance in concern" about climate change in the broad public to justify testing two hypotheses. Responding to three questions on a seven point scale ('strongly disagree' to 'strongly agree'), results indicated that "65% of respondents were above the midpoint," and that "40% of the consumers had mean scores of 5 or above." Thus, researchers concluded that "the general distribution for this construct is appropriate for use as a potential moderator in our predictions."

In the first study, 71 students from a private university in the eastern U.S. reviewed an advertisement for a mock piece of federal legislation, based on a 2x2 design of negative and positive framing and high and low concern. Three dependent measures were tested: the likelihood of buying environmentally friendly products, of voting for legislation that supports sustainability measures, and of behaving in an environmentally sustainable manner after reviewing an advertisement about climate change. All three measures were tested on a seven point scale, one based on 'very likely' and 'not at all likely', and the other 'very probable' and 'not probable'. Results showed that level of concern played a significant moderating role for all three measures ($p < .05$ for all three). More specifically, when concern is low, the likelihood of engaging in each of the three measures is higher when a negative frame is used. However, when concern is high, the effects of the frame are reduced. This supported their hypothesis.

In the second study, Newman et al. (2012) tested their hypothesis about promotion versus prevention frames: "When concern is low, a prevention (promotion) focus is more (less) persuasive," and "when concern is high, the effect of message framing is reduced." Again, researchers used a 2 x 2 design (promotion versus

prevention, and high versus low concern), asking 41 students in a public university marketing class in south-central U.S. to review the same ad as in Study #1. The results showed that when concern is low, likelihood of engaging in the three pro-environmentally measures is higher with a prevention frame ($p < .05$ for all three). This supported their hypothesis.

In another 2x2 design study, Spence and Pidgeon (2010) looked at the influence that one's distance from the impact of climate change has on a person's perceptions about both the severity of climate change, as well as how gain and loss framing affects a person's perceptions about the ability to mitigate its impacts. Also based in the United Kingdom, this study involved 161 psychology students (139 women, 22 men) in a "topic blind manner." Participants read parts of a government report that "described the losses that will occur from climate change or the gains that will occur from climate change mitigation," and reviewed maps that showed projected rising sea levels at both Cardiff England (local) and Rome (distant). Questions had a five point scale from 'Very negative' to 'Very positive' or 'Strongly agree' to 'Strongly disagree'. The impact of these frames were analyzed with participant perceptions about the severity of climate change and attitudes toward mitigation as the dependent variables, and gain/loss and distance frames as the fixed factors. Both the gain/loss and distant frames had a significant impact on the two variables ($p=.01$), and distant frames produced significantly more dramatic perceptions of climate change severity than local frames ($p=.01$). Meanwhile, gain frames produced significantly more dramatic perceptions about the impacts of climate change than loss frames ($p=.05$) and significantly more positive attitudes about climate change mitigation ($p=.01$). Finally, with respect to feelings about mitigation, participants were more positive when asked to consider mitigation in terms of a larger social benefits than in terms of solely a personal benefit ($p=.001$).

In another behaviorally focused study that involved both quantitative and qualitative research, Gifford and Comeau (2011) compared the "effect of motivational versus sacrifice message framing" on the participant's intent to perform climate change mitigation practices. Working with a list of 1038 residents of Ontario, Canada (536 females, 502 males) who were well distributed in age and location, the researchers randomly assigned the participants to one of three categories: motivational, sacrifice and no "priming." While

participants were asked to respond to a series of measures that related to five hypotheses, two were most pertinent to this literature review: [1] "Exposure to motivational framing will be associated with greater climate change engagement than will exposure to sacrifice framing" (based on a seven-point scale of 'strongly agree' to 'strongly disagree'), and [2] "Exposure to motivational framing will be associated with stronger intentions to change home- and transportation-based mitigation behaviors than will exposure to sacrifice framing" (based on fifteen "mitigative behavioral intentions"). Both of these hypotheses were supported by the findings.

Looking at yet another possible message frame, Meyers, Nisbet, Maibach and Leiserowitz (2012) conducted a study titled *A public health frame arouses emotions about climate change* (???). Based on the notion that public health and/or national security might make climate change "more personally relevant and emotionally engaging to segments of the public who are currently disengaged or even dismissive of the issue," the study tested this assumption through a December 2010 national online survey of 1,127 US citizens. Participants were randomly assigned to one of three articles, all structured the same, but addressing health, national security and the environment. Then, based on their existing perceptions about climate change, all were placed into one of six pre-determined categories called "Global Warming's Six Americas" (Maibach et al. 2010, as cited in Meyers et al., 2012). These categories include Alarmed, Concerned, Cautious, Disengaged, Doubtful and Dismissive, and participants were asked to identify which part of the framed message made them feel hopeful or angry. The health frame generated the most positive feelings, then the environment frame, and finally national security – including in the Cautious, Disengaged and Dismissive audiences. Not surprisingly, on the flip side, national security garnered the most anger, followed by the environment frame, and the health frame.

Hart (2011) researched the role that "numeracy" (an individual's numerical ability) plays in affecting the persuasiveness of a climate change frame that does and does not include statistics. One hundred and twenty-nine adults (51% male, 49% female, mean age of 39.8) were recruited at shopping malls in upstate New York, with participants randomly assigned to one of three groups: statistics, written descriptors and a control design.

Numeracy was tested as a moderating influence, and the message's impact was measured by asking the participants "How much would you be willing to contribution to organizations working on the issue of climate change?" Interestingly, the research showed that people lower in numeracy donated more than those higher in numeracy. Also, the "mean willingness to contribute for the story with statistics, the story without statistics, and the control conditions were respectively were $5.10, $3.55, and $3.22 for low-numerate participants and $2.38, $3.05, and $3.45 for high numerate participants." This paper was a little scant on details, but offered another layer of insight about how to frame a climate change message.

On the same topic of the effects of framing and statistics on a person's willingness to make a financial contribution, Chang and Lee (2010) examined the impact of "vividness congruency and statistical framing in promoting charitable donations." Using a 2 x 2 x 2 design (positive or negative frames, positive or negative vivid presentations, and larger or smaller numbered statistics), researchers collected questionnaires from 298 participants ranging in age from 19 – 59 years. Although this reviewer found no information about who the participants were and where the research was conducted, the study did state that 30% of the participants had served as a volunteer in the past and 83% had contributed to a charity in the last twelve months. Hypotheses pertinent to this review each addressed how best to promote a charitable cause: [1] a negative frame will be more effective (H1), [2] "congruency between vivid presentation and a framed message will be more effective" (H2), and [3] "there is a three-way interaction among message framing, vividness congruency and statistical framing" (H3). The resulted showed that all three hypotheses were supported or confirmed ($p < .05$ for all three). More specifically, having congruency between the message and the story (negative to negative or positive to positive) was more effective than incongruency. As well, when the message was negative, "statistics presented with larger numerators were more effective," and visa versa with respect to positive frames.

In yet another study looking at the affect of gain or loss frames in engaging the public in climate change, O'Neill & Nicholson-Cole (2009) set out to explore the notion that "using fear representations of climate change may be counterproductive" in two multi-method studies. In the first study addressing visual

representations and their affect on people's perceptions, researchers focused on whether participants' viewed climate change as "personally important" (salience) and their perceived ability to "do something about it" (efficacy). This Q-methodology study, conducted in the UK, involved 30 participants: ten each from three groups (young mothers, young professionals and high school students). The second "Iconic Representation" study was part focus group ($n = 27$) and part online survey ($n = 63$). Both studies sought to represent a range of socio-demographics rather than a representation of the wider public at large. Pertinent results from these two studies include the fact that participants "disagreed strongly with using fear as a communications tool" and instead suggested using icons that gave cause to see climate change as part of people's everyday lives (saliency). However, most intriguing were the seemingly contradictory results that [1] highlighted how images which "made participants feel most unable to do anything about climate change tended to be depictions of the most dramatic impacts of climate change," yet [2] "dramatic visions of [sic] human or animal suffering at both local and global scales, made climate change seem *most important* to them." This led researchers to conclude that "the very images that made participants have the greatest sense of being important were also disempowering at a personal level." When presented with these results, "the majority of participants were initially surprised at the findings," yet also agreed with them.

Also on the point of saliency, Schweizer, Davis and Thompson (2013) used a triangulating quantitative survey of 4,181 participants and qualitative interviews of 359 participants to test a framework for climate change engagement that focused on place-based education at symbolic sites for inspiring political action – national parks and wildlife refuges. Talking with visitors (51% male, 49% female) at 16 national parks and wildlife refuges across the U.S., half located in urban areas, researchers used a non-random intercept sampling method to inquire about participants' knowledge about climate change, their preferred way to learn about climate change, and their willingness to change behaviors to address climate change. Sixty-eight percent of survey respondents said they were "willing to change their behaviors in national parks and wildlife refuges to help reduce the impacts of climate change," and a majority were 'strongly attached' (21%) or 'attached' (34%) to the public land where they were interviewed. This led Schweizer et al. to conclude that "place-based"

engagement is a potentially valuable method for communications practitioners to "engage audiences in conversations about climate change." Also based on their findings, they suggested using "place as a medium and (2) connect that place to emotional and social meanings through (3) messages about localized impacts of climate change."

Finally, it is worth reviewing Zoch, Collins, Sisco and Supa's (2008) analysis of activist organization websites to see which framing techniques environmental organizations are employing in their communications efforts because many of the framing devices discussed above were analyzed in this paper. Therefore, this paper serves as a good review of how well these results are already being incorporated into communications efforts. Specifically, researchers looked for the presence of five framing devices identified by Gamson and Modigliani **(**Gamson & Modigliani, 1999, as cited by Zoch et al., 2008): catchphrases, depictions, metaphors, exemplars and visual images (each of which was further divided by Zoch et al.). Researchers selected 16 environmental and 16 social issue organizations from national media during the previous six months (this review will focus on the environmental organizations), and analyzed how frequently these framing devices are being used, and whether all or just some of them being used. Regarding how frequently these framing devices are being used, the most common device used was General Description, followed by Statistics, Organization as a Solution, Real Example and Testimony. General Description, Statistics and Testimony are forms of Depictions. Real Example is a form of Exemplars, and Organization as a Solution was not inherent to one of the five categories (but identified by researchers none-the-less). By the researchers' own admission, "Somewhat surprisingly, only 42 (14.6%) of the sites displayed Visual Images." Finally, no other device was used by more than 10% of the sites.

Conclusion

With respect to gain and loss frames, one of the most important considerations practitioners need to keep in mind is the affect a negative frame can have on disempowering the audience. This is especially true considering that environmental organizations (particularly the more activist-oriented ones) tend to speak about threats and problems first and foremost. Given that practitioners will not always know their audience's perceptions about climate change, or have an audience with a common perception of climate change, the reviewer has offered recommendations here that are generally safer for practitioners to use with the broader public.

Morton et al (2010) found that if the message conveys a high(er) level of uncertainty about climate change (which is somewhat typical of a scientist or science-driven organization, since they are typically unwilling to say definitely what will happen due to climate change), then a negatively framed message (i.e., "focused on the likelihood of climate change losses") will have a negative affect on the audience's intention to engage in environmentally beneficial behaviors. This suggests framing one's message about climate change in a positive light, by focusing on "the possibility of losses not occurring." In fact, for the positive frame, Morton et al. (2010) found that "high uncertainty was instead associated with stronger intentions to act pro-environmentally than low uncertainty." So, if the practitioner's intention is to get one's audience to take some action, it is generally best to keep one's framing about climate change focusing on "the possibility of avoiding loss (i.e., by presenting predictions about what *will not happen*)." Adding credence to this approach, Morton et al. found that "people were more convinced of the effectiveness of action when climate impacts were framed positively," and thus people were more likely to take action.

At a basic level of human nature, this makes sense: people are more likely to act if they think their efforts will make a difference. Practitioners should focus on how to convey that sense of "efficacy" in a positive manner. In fact, Morton et al. conclude with a paragraph well worth reading for its strategic insights (see 4.1; page 108). That paragraph is bookended with the following statements. [1] "In fact, subtle shifts in the

framing of such messages can turn uncertainty into an asset if it motivates people to be cautious in the face of such uncertainty"; and [2] "Simply reframing this message to emphasise the losses that may not occur (with an embedded implication that they may occur nonetheless) might instead elicit caution and a willingness to act in ways that avoid a negative future. At least in this domain, it seems that uncertain optimism about the future is more motivating than uncertain pessimism."

With respect to a person's concern about climate change in general and how that affects her/his willingness to take positive actions, Newman et al. (2012) made two important conclusions. First, "when concern is low, more negative framing and a prevention focus have more favourable persuasive effects," and second "promoting the potential consequences of inaction more strongly affect sustainable consumer intentions" (i.e., consumers respond better to a reactive approach when attempting to encourage sustainable behavior). This may seem counterintuitive to Morton et al.'s findings, but the critical difference has to do with the audience's level of concern about climate change versus an organization's ability to convey certainty about what can be done to address climate change. If the communicator cannot express certainty about what can be done, then it is best to frame the message in the positive. If the audience's level of concern overall is low, then a negative message can work. The trick is what should a practitioner do if presented with both factors? Additional research is needed to address this issue.

Spence and Pidgeon (2010) concluded that "attitudes towards climate change mitigation may be effectively promoted by discussing the gains produced through climate change mitigation (as opposed to the losses of not mitigating climate change) and by focusing individuals on the social impacts (perhaps in addition to the personal impacts) of climate change mitigation." Here they are suggesting that practitioners focus on both the positive aspects of mitigation and the positive affect mitigation will have on the larger community.

Based on Gifford and Comeau's research (2011), communications practitioners should "employ motivational-oriented and causative language rather than the sacrifice framing that has been employed by some climate change advocates and agencies." However, with respect to messaging for men and women, they explain that "if messages can be targeted, for example to media outlets that are primarily attended to by

particular demographic groups, the results suggest that certain kinds of messages should be more effective than others." Finally, Gifford and Comeau discuss the value of semantics in choosing words, particularly regarding verbs. Practitioners would do well to read their recommendations for gender-specific messaging and semantics in the *Discussion* section (4.2 and 4.3, respectively; pages 1305-06).

Meyers et al (2012) suggested that across a diversity of audiences, it is best to discuss the value of addressing climate change in terms of benefits to human health, as "participants who read the public health message reacted with at least some feelings of hope." This confers with other research not addressed in this review that highlights how Americans consider health a higher priority issue than the environment.

The article on "numeracy" (Hart 2011) speaks to the benefit of including statistics in any messaging, as it makes the message more persuasive in influencing people to make a financial contribution. Although not stated explicitly in the research, this reviewer believes it is wise to use both numerical and descriptive (words) statistics so as to make the messaging work for the broad public (given that people will likely relate to one style of statistics more than the other). Related to this, Chang and Lee (2010) found that smaller numbered statistics (75% or 3/4 versus 75 out of 100) "are found to facilitate effects of the negatively framed message with a negative case story" and alternatively, "statistics presented with a large number increase the advertising influences of the positively framed message with a positive case story."

Contrary to some points made above, Chang and Lee also found that "negative framing is more effective than positive framing" with respect to encouraging financial contributions (again, it is critical for the practitioner to be fully aware of the context, purpose and audience of her/his communications efforts). Their findings also suggest that practitioners use stories about real people to highlight a frame ("vividness"), but that the story's frame should mesh with the overall frame ("congruence": positive with positive, and negative with negative).

Finally, shifting to communications strategies beyond framing, Schwiezer et al (2013) made a compelling case for practitioners developing communications programs that convene their target audience(s) in iconic natural environments to effectively convey messages about climate change and the need for people to engage

in the issue. This reviewer's own experience as a natural history interpreter and outdoor guide confirms the

benefits of such a communications strategy. Equally important from this reviewer's recent experience, Zoch

et al. (2008) point out the value of using more visual images in one's communications efforts. In fact, a great

way to combine these two strategies is to engage the public in taking pictures and making art in and of our

iconic public lands – thereby advancing climate change communications in two ways at once.

In conclusion, it is clear to this reviewer that environmental communications practitioners have much to

keep in mind if they want to make their climate change communications more effective. First and foremost,

practitioners should pay greater attention to the use of positive frames (or gain frames) in those situations

where a positive frame will be more effective for the identified purpose and/or target audience. Second, this

literature review suggests some new frames to use beyond simply gain and loss frames, such as incorporating

human health, climate change mitigation, and better use of statistics and vivid storytelling into one's

communications toolbox. Finally, this review has presented some great ideas for how practitioners can

creatively "think outside the box" of tradition communications products to convey messages about climate

change (namely field trips to public lands and increased use of images). As a twenty-year veteran of

environmental communications, this reviewer is well aware of how much of the environmental community is

known for using many stale practices in its communications efforts. This review provides some new ideas and

very strategic thinking about how to better convey our message, both in our frames and our delivery.

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