

CREATING A CLIMATE FOR CHANGE

Communicating Climate Change and
Facilitating Social Change

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Toward the social tipping point: creating a climate for change

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Introduction

Over the course of the project that culminated in this book, the landscape of climate change science, communication, and related societal responses has changed remarkably – both in the United States and elsewhere. Considering the entirety of what political scientists call the global warming “issue domain” (Jenkins-Smith and Sabatier 1999; Clark *et al.*, 2006), we have witnessed considerable movement, including the growing number of actors involved, and shifts in their “goals, interests, beliefs, strategies, and resources; the institutions that enable and constrain interactions among those actors; the framings, discourse, and agenda related to the issue; and the existing policies and behaviors of relevant actors” (Clark *et al.*, 2006).

In this concluding chapter, we have five goals. First, we reflect on where we are in the evolution of the climate change issue domain, and then develop a simple conceptual framework to integrate the many perspectives offered in preceding chapters on the role communication can play – in principle – in facilitating social change. Next we dispel a number of myths still prevalent among communicators and social change agents that we believe hinder change. Fourth, we extract larger lessons from the chapters that could improve climate change communication and advance the evolution of this issue domain. Finally, we suggest questions for future research and action steps. The collective experience represented in this volume suggests that these research directions and action steps can further support effective communication and responses to climate change in ways that help move all levels of society toward an environmentally, economically, and socially more sustainable future.

How close to the tipping point?

Only hindsight allows us to know for sure how far along a society is on the trajectory of social change. Clearly, the judgment of “where we are” also depends on the type and scale of change on which one chooses to focus. We might observe social change at the individual, organizational, and societal levels, reflected in a myriad of social characteristics, such as economic or media trends, the growth of social movements or counter-movements, and so on.

In recent years, scientists have begun integrating various theories of the dynamics of social change in the context of the daunting task of navigating a transition toward a sustainable world (Gunderson and Holling, 2001; Gunderson, Holling, and Light, 1995; Kates *et al.*, 2001; NRC, 1999; Raskin *et al.*, 2002; Schellnhuber *et al.*, 2006; Speth, 1992). Reducing greenhouse gas emissions and adapting to the unavoidable impacts of climate change are important components of this sustainability transition (Smit *et al.*, 2001; Toth *et al.*, 2001; Yohe, 2001). As we argued in the introduction to this volume, awareness of the need for this fundamental transition – and for climate change policies in particular – has grown, but many social systems are also highly resistant to change. Efforts to mitigate climate change will eventually reach deeply into the workings of society and may well require difficult policy choices.

Certainly, some types of social transformation are faster and more easily achieved while others take longer (e.g., Bamberg, 2003; Michaelis, 2003). Moreover, various characteristics of society transform simultaneously, albeit at different rates and in ways that may or may not be positively reinforcing. The diverse literature on these social change processes has no easy answers on how to move smoothly through this transition, yet experts share a common conceptualization of how such change typically unfolds (Figure 32.1) (e.g., Kemp and Lorbach, 2003; Kemp and Rotmans, 2004; Moyer *et al.*, 2001; Raskin *et al.*, 2002; Rogers, 2003; Rotmans, Kemp, and van Asselt, 2001).

Where are we, then, on this prototypical S-curve of social change? We argue that the US climate protection movement with all its different components is quietly building and beginning to emerge, but – as of early 2006 – is still in a phase prior to the take-off or tipping point (e.g., Moser, 2007). Tipping points are commonly defined as moments in time where a normally stable or only gradually changing phenomenon suddenly takes a radical turn (Gladwell, 2000), e.g., when something unique suddenly becomes common. Once a movement reaches that point,

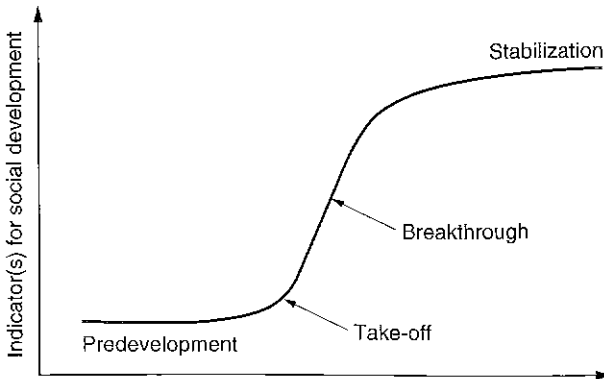


Fig. 32.1. The typical stages of social transformation

This conceptual diagram will be interpreted in different ways depending on the social change in question. For example, the invention, spread, and eventual saturation of the market with a new energy-related technology may follow such a development and might be measured by sales (vertical axis) over time (horizontal axis).

Source: Kemp and Rotmans (2004), reprinted, with permission, by René Kemp.

public and political engagement, policy change, and the adoption of climate-friendlier technologies (e.g., renewable energy) will spread rapidly from the pioneers and early adopters to the vast majority of the population, industry, and other civic and political actors. We cannot predict what event or convergence of processes will trigger this take-off, but it could emerge from either within the issue domain or from a societal development that has nothing to do with climate change. By changing the ways in which climate change is communicated and reframed, people can help the movement take off if and when such a trigger event occurs (Moyer *et al.*, 2001).

We are already seeing heightened attention to climate change. Increasingly urgent scientific findings, together with stories on local to international policy developments, the entry of important players into the climate change issue domain, and government interference with how scientists communicate climate change, have kept global warming on the public radar screen. With the growing number of increasingly diverse players now involved, climate change communication is also changing – at least in some corners – in tone and focus. The examples in this book illustrate that communication can facilitate social change and move us along the S-curve of societal transformation. Below, we offer a simple conceptual framework that helps us understand this relationship and reflects the dynamics described in preceding chapters.

Conceptualizing the link between communication and social change

In the introduction to this book we broadly defined communication as a “*continuous and dynamic process unfolding among people that facilitates an exchange of ideas, feelings, and information as well as the forming of mutual understanding and common visions of a desirable future.*” Here, we link this dynamic conception more fully with social change.

The oft-repeated call for more and better communication to support behavior and other social changes assumes that *motivation* (typically in the form of more information) is the missing ingredient, that all we need to achieve more sustainable policies and practices is stronger and more appropriate motivation. Motivators, as discussed throughout this book, can range from psychological and moral to economic and legal ones. For different audiences and in different contexts, these motivators play an indispensable role, but typically, motivation is only half the story.

The other half is *resistance* or *barriers*. Again, our contributors have written at length about barriers in a wide variety of contexts, from a lack of infrastructure to self-limiting mental models. These very real barriers are rarely consciously considered and addressed at the outset of a communication and social change campaign. In short, if there is one “simple” formula that can capture the link between communication and social change, it is this:

For communication to be effective, i.e., to facilitate a desired social change, it must accomplish two things: sufficiently *elevate and maintain the motivation* to change a practice or policy and at the same time *contribute to lowering the barriers* to doing so.

Too many communicators and change agents still do not pay attention to both sides of this equation. The simplicity of this conceptual formula – while fairly obvious – hides the fact that there is nothing “simple” about implementing it. Simply trying to motivate people to change behavior without acknowledging the real barriers in the way of change will have little success. While just talking about the lack of infrastructure will not put it in place, it may shift the focus of the campaign. Alternatively, communication can achieve its desired outcome if it addresses existing obstacles explicitly and provides useful solutions. Looking for synergies among actors and institutions across scales is essential for addressing the many situations where barriers are outside the sphere of influence of a single actor.

Our mental models or habits of thought are among the most critical barriers to change. Those we hold about communication and social change

are no exception. The first challenge before us, then, is to help change the mental models that communicators and social change agents hold about the ways in which they can make a difference. The challenge is one of dispelling common myths about communication and social change.

Dispelling common myths about communication and social change

We call the many ineffective ways people use to promote public and political engagement with climate change “myths,” since they still pervade many of the communication strategies practiced today. What allows these myths to persist is that they often contain a kernel of truth. If taken to the extreme, however, they are counterproductive and actually become hurdles to effective communication and social transformation.

“If only people understood the problem, they would change their behavior”

This is maybe the most common myth among many communicators, especially scientists. It is known in the social sciences as the knowledge or information “deficit model” and claims that people simply don’t have enough information; therefore we must fill in this deficit. Once people understand, they will be motivated to act on the problem (Sturgis and Allum, 2004; Blake, 1999; Bak, 2001; Schultz, 2002). Researchers have repeatedly shown the deficit model to be an inadequate explanation of human behavior. However, this insight has not yet fully permeated the natural and physical sciences community nor, indeed, much of the non-governmental or outreach communities. Of course, when necessary, correcting incorrect mental models of the causes of a problem is critical to predisposing people to actions that protect the climate (Bostrom and Lashof). However, “more information” typically does not generate action on issues of societal import, and, as Dunwoody, and Rabkin with Gershon report, it is possible for information and understanding to become substitutes for action: individuals absorbing information sometimes feel that they have actually “done something” simply by having learned about a problem.

“Communicating climate change means convincing people of the reality of the problem”

This closely related myth assumes that people are just not yet convinced of the reality of climate change. However, polls show clearly that the majority of Americans already believe that climate change is real

(see Leiserowitz). Even a strong conviction that there is a problem may not result in different behavior or action, however, as Tribbia, Moser, Chess and Johnson, and others explain. A corollary is that public communication on climate change has emphasized global temperature trends, emissions, and other changes in the climate system. So long as the focus stays here, we remain trapped in conversations about physical science and unable to move to the next phase of communication: the social changes needed to respond to climate change. Moving the conversation beyond science then enables discussion of solutions, values, and visions of the future, a more appropriate and effective step toward social action on climate.

“Maybe if we just scare people more, they’ll get how urgent climate change is”

Clearly, climate change offers plenty of reasons to believe it is a critically urgent issue (see especially Moser). Yet there are two reasons to be wary of appeals to fear to communicate urgency. First, climate change by itself can provoke a strong fear response, possibly resulting in maladaptive behaviors. Second, attempts to communicate global warming by emphasizing its scary aspects often serve only to reinforce these counterproductive responses. The temptation, therefore, to “make climate change more frightening” is not generally going to be effective in motivating real long-term behavior change, absent practical, doable alternative courses of action.

“What we really need is a big disaster”

Several leading politicians and global change experts express the sentiment that a disaster or two would move us to action. Indeed, a disaster offers a “window of opportunity” that grabs people’s attention, serves as a “teachable moment,” could be seen as a harbinger of future increases in disasters caused by climate change, and typically affects – directly or indirectly – large numbers of people (i.e., voters). Sometimes disasters can indeed bring long-neglected actions to the front burner. But, as Bostrom and Lashof warn, disasters may also activate inappropriate mental models (e.g., disasters as “acts of God”), or aggravate already latent fear responses and – depending on circumstances – provoke fear rather than danger control reactions. Moreover, in some cases, disasters actually close windows of opportunity, as government agencies and disaster victims focus on immediate needs – and rightly so, using available staff and financial resources for recovery. As example after example shows, post-disaster may not be the

best time to implement climate mitigation or adaptation policies (e.g., Moser, 2005), and actually distract people from climate change.

“Let’s wait for a ‘knight on a big white horse’ to lead us forward”

Numerous examples in this book illustrate the critical importance of leaders to initiate or sustain change (e.g., James *et al.*, Watrous and Fraley, DuVair *et al.*, Tennis, Young, and Meyer). These examples confirm a deeply held belief – especially among Americans – in the necessity of individuals taking charge of a situation. While history has produced great leaders doing just that, this mental model can also induce complacency: until a leader appears, there is nothing to do. Simultaneously, we can blame heads of industry or government for stalling action. Hoping that someone will eventually take care of this problem in the future ignores the obvious – the many actors already preparing the ground for social change. The questions are, what works for the present situation? Where can change happen? And who are the necessary change agents?

“(Scientific) uncertainty is the main obstacle to action”

This common myth assumes that behavioral change or political action has not yet occurred because climate change is wrought with such big scientific uncertainties that it precludes action. It is undoubtedly true that the climate system is enormously complex and uncertain. What this myth ignores, however, is the fact that we almost never have certainty about the future in other areas of personal or public concern: real estate or stock markets, population changes, national security risks, international conflicts, or our personal health. Despite the uncertainty we act in these arenas all the time, seeking dialogue, policy, and other strategies to manage risks. It is not scientific uncertainty, but human choice in the face of uncertainty that makes our response to climate change different.

“Climate change is a unique social challenge – we’ve never had to deal with anything like it”

The lure of this myth is strong, since climate change involves such long time periods and lags, complexities, and uncertainties in its physical and social aspects (Field *et al.*, 2004). However, if one looks at social change throughout history, other issues such as slavery or fundamental changes in people’s worldviews (e.g., from an Earth-centric to a solar-centric view

of our place in the universe) have had similar path dependencies, decadal commitments, and expensive capital implications. The problem with accepting the “uniqueness” myth is that it tends to paralyze individuals and institutions rather than empower them. Pointing out how we have made similarly long-term, radical social transitions in the past can help mobilize people and put the challenge into proper perspective.

“Appealing to people’s rational side is the most effective way to communicate”

Western rationalist mythology would want us to make decisions based on rational thought alone. Yet people make decisions based on a myriad of influences, including “irrational” beliefs and emotions (e.g., Kahneman, 2003). Emotions play a powerful and necessary role in decision-making (Leiserowitz, Moser), as do preferences such as convenience, prestige, and so on (Chess and Johnson, Tribbia, Agyeman *et al.*, Michaelis, Rabkin with Gershon, and Jamieson). Communicators need to appeal to these emotional, belief-, value-, and identity-driven aspects of individuals, especially the “empowering” emotions, rather than the ones that tend to promote apathy, denial, and disengagement, as well as to their rational side.

“‘Good’ values will produce ‘good’ outcomes for the climate”

It is easy to fall into the myth that sees a direct and causal link between our most revered values and a positive environmental outcome. Taking this view can miss critical contradictions, however. The value of “justice for all” is a good example. We staunchly believe in equity and fairness for all people as a sacred right, but potentially run into a values conflict when we apply this principle to climate change. As Agyeman *et al.* and McNeeley and Huntington argue, in the past, industrialized countries have been the major contributors to anthropogenic climate change. In the very near future, rapidly developing countries will come into their fair share of economic development, energy use, and related greenhouse gas emissions. Without “leapfrogging” technology that allows these countries to develop economically while avoiding negative environmental and climate impacts, our highly cherished value of fairness will be in direct conflict with mitigating climate change.

Having identified some of the most critical myths impeding effective communication for social change, we can now ask: what might work better?

Communication in true support of social change: Insights from the chapters

As we stated above, communication can more effectively facilitate social change the more it elevates and maintains the motivation to change a practice or policy, while lowering the barriers to that change. Below we synthesize important insights on each component of this communication—social change link.

Elements of effective communication of climate change

Our contributors understand the communication process not merely as one-way information transmission but as an intricate and many-faceted form of mutual engagement.

Audience choice is the first and most important strategic step in that process. With an eye to a particular desired outcome, communicators must carefully select the right audience, i.e., those people who need to know about the issue, can make a desired change, pull the necessary political levers, or are in a position to influence those who can. For example, certain audiences such as manufactures, designers, builders, planners, and policy-makers make decisions that affect the actions of many people, not just those of an individual (Dilling and Farhar, Cole with Watrous).

Next, it is critical to learn as much as possible about the audience's (or interpretive community's) pre-existing mental models and levels of understanding (Bostrom and Lashof); its interests, values, and concerns; and the channels through which the audience is likely to receive the communication – a briefing, a public talk, a mailing in the monthly electricity bill, or the evening news (Dunwoody, Leiserowitz). The channels themselves must be evaluated carefully to ensure they can achieve the desired outcome (Dunwoody). For example, interpersonal communication is typically required to persuade someone of the importance of an issue or of a needed behavior change.

Further, effective communication has to achieve a match between message content, framing, and the concerns and values with which audiences resonate (Bostrom and Lashof). Pratt and Rabkin describe how neglecting to do so prevented previous communication efforts to reach residents of San Diego. Similarly, Agyeman *et al.* argue convincingly that the justice frame (which emphasizes a fair distribution of environmental burdens across class and ethnic differences) may serve well to reach minority and working-class audiences, until recently largely ignored and unmoved

by “mainstream” climate communication. Bingham, McNeeley and Huntington, Michaelis, Leiserowitz, and Arroyo and Preston make parallel arguments for different audiences.

In the majority of chapters, our contributors find that in order to make global climate change relevant to their audiences, global warming has to be made “local,” whether directly by focusing on impacts that matter to them, or indirectly by focusing on the co-benefits of climate-friendly action. One useful option is to tap into lay people’s own observations of change to jump-start a conversation about what climate change might mean locally, and help people relate to global patterns of change already well documented. This “conversation starter” helps to counter perceptions that climate change will happen “in a hundred years from now” in far-away places to other people (Leiserowitz). Leiserowitz argues that communicators should highlight those climate change impacts that can be linked to people’s persistent concerns, such as human health or the future of their children. Cole and Watrous emphasize the importance of describing potential climate change impacts on places that rank highly in the public imagination. Ungar carries this argument further by suggesting that climate change has to be linked to culturally resonant symbols to gain wider traction. In some instances “making global climate change local” means not talking about climate change at all, but about related issues (e.g., air pollution, traffic congestion, energy, and, hence, cost savings) or embed it in larger concerns such as sustainability (Watrous and Fraley), which may find broader appeal.

While we have argued that the climate conversation has to move beyond science, science will not disappear, nor will scientists stop being important messengers. The challenge remains how to make global warming locally relevant and personally salient in scientifically credible ways. Indeed, this tension carries throughout this book and we expect it to persist for the foreseeable future. Here, Cole and Watrous, Warner, and McCright provide useful insights: contrary to most scientists’ impulses, they suggest to lead with certainty, i.e., with those issues where the science is strongest (e.g., already documented changes, human contributions to climate change). Clearly, as Leiserowitz argues, uncertainty should never be hidden and scientific understanding never overstated. Such a strategy will only backfire.

Moreover, some frames through which we look at climate change make the issue of scientific uncertainty less important. For example, Bingham’s and Agyeman *et al.*’s frames of climate change as a moral or justice issue don’t require perfect understanding to see why caring for creation or defending social equity is important.

Effective communication also has to achieve a match between the audience and what it believes to be a credible messenger. For example, Cole and Watrous describe how California state policy-makers find local scientists more credible, accessible, and persuasive than “just any” scientist. Chess and Johnson, Leiserowitz, Young, Watrous and Fraley, and Tennis equally emphasize that whatever the message, it has to come from a trusted source.

Importantly, many of our contributors argue for broadening the range of “messengers.” As climate change moves beyond being a purely “scientific” or “environmental” issue, industry leaders, political champions, religious leaders, and “PLUs” (people like us)¹ in other communities are joining the public discourse as equally legitimate communicators. Because messengers are part of the framing, the right speaker also suggests to the audience how to interpret climate change (Bostrom and Lashof).

Message reception is a frequently neglected element of the communication process. While the relative importance of the emotional aspects of communication may differ among audiences, to many, climate change is scary, overwhelming, and can quickly evoke dark images of the future, resulting in maladaptive responses to information (Moser). The remedies she and others (e.g., Tribbia, Chess and Johnson, Rabkin with Gershon, and Bingham) suggest include tapping into culturally resonant, positive, empowering values and personal aspirations such as innate goodness, responsibility toward others and the Earth, leadership, innovation, respect, caring, and stewardship (see also Schultz and Zelezny, 2003).

Our authors also argue that effective communicators need to be more solution- (rather than just problem-) oriented: giving people specific ideas of what to do, how to do it, creating a sense that these actions can effectively contribute to the solution, and, in fact, that individuals are part of larger efforts. They have to evoke hope, empower people, and help them envision an obtainable, desirable future.

A thread of thinking runs through this volume that is not at all revolutionary or new by itself but contrary to much past practice: the call for a shift from one-way “message delivery” to more engaging, dialogic forms of communicating (Regan, Harriss, Agyeman *et al.*, Rabkin with Gershon). Dialogue offers a forum in which value differences, conflicts, misunderstandings, and the communal visioning, and search for solutions can be addressed directly. Young, DuVair *et al.*, and Tennis also discuss how one-on-one and small-group communication in social networks is essential for knowledge exchange, resolution of differences, social learning, diffusion of innovation, persuasion, and mutual support.

Elevating and maintaining motivation for change

Social change-oriented communication, then, is a form of social capital building, and itself benefits from pre-existing social capital, which supports societal transformation at all levels.² Because this transformation is difficult and – certainly in the case of climate change – will require long-term engagement, the question of how to elevate and maintain motivation to implement the necessary changes becomes centrally important.

Almost all contributors to this book discuss a range of motivations that communicators and social change agents can use. While maybe not the most critical prompt, knowledge can be motivating when it helps actors understand the effective and appropriate level of change necessary, as Bostrom and Lashof, Leiserowitz, Grotzer and Lincoln, and Chess and Johnson argue.

At a more fundamental level, however, climate change communication must reach into deeper and more persistent beliefs, concerns, social norms, aspirations, and underlying values to generate motivation. Grotzer and Lincoln, and Bateson describe ways to instill these deeper values and beliefs in children through an education that prepares young minds for the changing and globally interconnected world they are inheriting. Leiserowitz and Moser suggest tapping into affect while others advise that deep and persistent motivations lie in people's social identities and relationships (e.g., Tribbia, Michaelis, Arroyo and Preston, Dilling and Farhar, Tennis, Meyer, Jamieson). Showing how an unsustainable behavior is contradictory to people's self-conception or how they want to be seen by others can motivate them to adjust their behaviors to create greater consistency.

The role of social influence and power in human behavior has long been recognized by social psychologists and others (e.g., French and Raven, 1959; Raven, 1993; Bagozzi and Lee, 2002) and provides another important reason to expand the range of communicators. Social influence is exerted in a variety of ways, including through expert knowledge, the ability to reward or coerce, by moral standing, or by reputation that confers legitimate power. Communicators will have different, or perhaps multiple, sources of influence and may thus be able to reach different audiences in a powerful way.

Of course, our actions and aspirations are never entirely consistent. Numerous social influences act on us at all times, resulting occasionally in outright contradictory actions or underlying values. For example, emitting massive amounts of greenhouse gases by jetting around the world to partake in important climate meetings is hard to reconcile with our long-term intention to leave our children a world safe from dangerous climate change.

To some audiences, the language of the bottom line and the risk of financial loss can be strongly motivating. Hence Atcheson's urging to build these economic signals into "doing business." Several of our contributors describe how this is already occurring – at least among the pioneers: Arroyo and Preston, James *et al.*, Dilling and Farhar, Young, and Watrous and Fraley discuss how taking early action can be economically beneficial for businesses and municipalities, giving them a market advantage, protecting their shareholders from climate-related risks, or simply saving money. Similarly, leading US states have found ways to save money by reducing emissions, and thus illustrate that "it can be done" without hurting businesses (duVair *et al.* and Tennis).

Economic incentives can easily translate into political and legal incentives for politicians and lawmakers. Many view "being a leader" as politically advantageous vis-à-vis their various constituencies and their political ambitions (e.g., California Governor Schwarzenegger as described by duVair *et al.*). The political calculus, however, is quite vulnerable to changing circumstance, and may thus be a less reliable motivation (Tennis). Averill points to threats from litigation that can exert a strong motivation to engage constructively on climate change issues, while Dilling and Farhar point to other legal mechanisms (standards, mandates) to act in "climate-friendly" ways.

For mid-latitudinal audiences, all these motivations serve to connect climate change to the individual, making it more salient, more personally relevant and in some cases more visible and urgent. In Alaska – as McNeeley and Huntington show – climate change itself has become the unequivocal motivation as impacts already directly affect people's lives. Their direct experience, in fact, is motivating Alaska Natives to alter the conversation and focus of social action.

None of the motivations discussed above unleashes its full power until it becomes integrated into a common problem understanding and a common vision of a desirable future. Such visions play a critical role in maintaining people's engagement, especially when "the going gets tough," when people encounter set-backs, or simply cannot see immediate results from their efforts. There is good reason to believe that even as we make great strides and good progress in reducing our emissions, global atmospheric GHG concentrations and temperatures will increase before they stabilize, much less decline. Volatile commitment to climate action is a reasonable scenario of societal response. It is thus all the more important that in small and large communities we develop visions of positive, desirable futures, and identify clear metrics of progress toward these goals, so that even if the

full vision is not yet realized, people see a path for getting there and recognize themselves – as hope theory (Moser) suggests – as being on the way.

Overcoming barriers

It would be easy to suggest that barriers are just the opposite of all the things that could motivate us. But they are not always mirror images, and in fact, neglecting the real-world obstacles in a communication campaign may cause many change efforts to die a silent death. Communication and social change campaigns need to explicitly consider and address these barriers to increase their chances of accomplishing their intended goals.

In an information-overloaded world, our filters have become very selective. People may simply block out yet another climate change story that follows an all-too-familiar pattern, uses the same old “talking heads,” triggers the same old associations, or worse, says one more time (in pictures or words) that “the sky is falling.” Thus, the task of climate change communication is to break through the sound barrier, have news value, create a “need to know” (as Dunwoody argues), and maybe even be odd or surprising (e.g., humorous, or using the creative arts). In short, the communication must give people a reason to pay attention and then sustain the listener’s engagement.

People’s mental models (Bostrom and Lashof) or “habits of thought” (Bateson) are highly resistant to change; they are the well-trodden paths in our brains that we use to try to understand even unfamiliar issues. Just as it is critical to acknowledge and rectify these mental models, it is equally difficult to break behavioral habits and procedures. James *et al.* describe this situation for businesses and other organizations, and the same is true even in such pioneering governments as those in Santa Monica (Watrous and Fraley) or on the West and East Coasts (duVair *et al.* and Tennis). It is not just *beginning* a new behavior but also *stopping* an old action that involves social or financial costs (see James *et al.*, Arroyo and Preston, Young, Watrous and Fraley, Atcheson, and Tennis). The remedy these authors suggest is to understand more fully the hidden benefits of acting a certain way as well as those of changing to another, and then to address them explicitly: whether through training, financial incentive, verbal encouragement, or a different expectation from a supervisor. But ultimately, habits are changed with patience, creativity, down-to-earth practical thinking, flexibility, and stern commitment.

Commonly, as people begin to understand and emotionally relate to the risks of climate change, they want to do something about them. This reflects

their desire to not just be part of the problem, but part of the solution (see, e.g., Moser, Dunwoody). People want to know what they can do, that they are able to do it, and that others are doing their share as well. The insights from this volume suggest that having solution information at the ready is just as important as, if not more important than, problem information to sustain an audience's active engagement, an often difficult task for scientists. The successful collaboration and division of labor between scientists and an advocacy group described by Cole with Watrous suggests one possible model for resolving scientists' need for maintaining their credibility while being responsive to audience needs.

Merely identifying possible actions, however, is inadequate for all but the most self-motivated, committed, and sophisticated audiences. For most individuals, what is required to actually implement these actions is empowerment through a sense of self-efficacy (Moser, Tribbia), social support or peer pressure (Chess and Johnson, Rabkin with Gershon, and Watrous and Fraley), or modeling by others (James *et al.*, Arroyo and Preston, and Young). In groups people help each other learn, offer assistance, but also produce accountability — all of which can overcome resistance and barriers. Finally, people can fail to implement possible actions if the lack of infrastructure or other logistics make it impossible (Tribbia, Dilling and Farhar).

It is equally important to recognize that some social norms and values may be antithetical to the innovative thinking necessary for climate-beneficial changes or to change in general. For example, we deeply value *stability* (social, political, climatological, even ecological), but we also value *growth* (particularly in economic terms). We tend *not* to teach our children to expect or how to effectively deal with constant change (Bateson).

Moreover, social and political institutions help stabilize a society, and, thus, by their nature are resistant to change. This makes political institutions in some ways less responsive to a constituency's changing political "mood" and may — in part — explain the slow response of US federal lawmakers to the increasing level of pressure from the states, the business community, and municipalities. Jamieson contends that the US electoral system (including such supporting systems as campaign financing and the media) makes it increasingly difficult to bring about social change through this pathway. Meyer, on the other hand, describes how political movements have succeeded in aligning bottom-up pressures to bring about political and policy change, and Averill shows how advocates use the legal system to do the same. Tennis and duVair *et al.* add to this debate that lower levels of government can serve as "laboratories" for political

and institutional innovation as well as often forcing the hand of federal policy-making.

In summary, at the individual and group levels, many facts of social systems, including social norms and narrow interests, can hinder change, as can organizational culture and herd mentality (see James *et al.*). Communicators would do well to help people find higher common ground and identify ways to meet their diverse goals so as to help reduce or at least not increase their emissions impact.

Fostering social change

Writing about social change as it happens never provides more than a snapshot in time while the ground beneath us shifts. The last few years have seen an encouraging increase of diverse activities in many sectors of society, which defy the image of the United States (in particular) as a merely obstructionist, laggard country.

Much as Atcheson, James *et al.*, and Arroyo and Preston describe in their chapters, we now observe a growing number of players in the business community who take seriously the climate risks to their investment portfolios and business strategies. Many cities beyond those described by Young, Watrous and Fraley, Pratt and Rabkin, Rabkin with Gershon, and duVair *et al.* have committed themselves to meeting the Kyoto Protocol emission reduction goals.³ A growing number of US states are also committing to GHG reductions and mandatory renewable portfolio standards – duVair *et al.*, Tennis, and Dilling and Farhar describe only the most visible ones. Several high-profile climate-change-related lawsuits, as Averill describes, are also exerting some political pressure, while conscious movement-building efforts (see Meyer), concomitant with the break-up of previously monolithic opinion blocks (e.g., the evangelical community) are under way (Moser, 2007). The fledgling political shifts and policy changes at the US federal level must be seen as the result of these political pressures from within and from international players. In fact, recent years have seen a remarkable increase in political engagement on climate change. The question, then, is whether there are any areas where it is most important to focus future communication and social change efforts. Our suggestions may frustrate some and encourage others.

Based on our observations of this burgeoning activity and recognizing the important impacts these activities have on other areas of society, one answer to the question of what matters most is simply to say: it all matters for the climb up the S-curve of societal transformation. There is *no one*

key leverage point or obvious scale to focus all our attention (“if we only did X, the problem would be solved”).

Instead, what the chapters help us understand is a critical cross- and across-scale story underlying social change. Activities at the small scale – the individual, local, and state levels – might be limited in actual emission reductions, but spread a symbolic message that engages others. These small-scale actions are critical, as Arroyo and Preston describe in industry or Young in municipalities, for the emergence and spread of innovation and social learning, and illustrating to the more risk-averse in society that there are “low-hanging fruit.” These early and relatively easy “solutions” are ways to get a first commitment, on which bigger commitments can be built. They also build bottom-up political and economic pressures that begin to take off when heretofore separate social groups or interests form coalitions and thereby leverage their respective strengths for greater impact (duVair *et al.*, Tennis, Meyer). The small-scale actions and successes slowly change the political climate, which in turn enables larger policy and political changes. As we learned from the state chapters by duVair *et al.* and Tennis, policy changes at lower levels of government can also create direct or indirect pressure on higher levels of government to level the regulatory playing field. Other chapters tell a complementary top-down story to help “make it easy” for consumers to choose climate-friendly products and services (e.g., Dilling and Farhar, Tribbia, Atcheson, and Young).

Our contributors also help us understand that social change happens on a variety of temporal scales. The deeper the sought social change, the longer it will take to bring about. There is an unresolved tension running through our chapters regarding how deep societal changes in response to climate change need be, and we don’t try to resolve it here. Resolving these tensions involves normative choices that point again to the need for broad public dialogue.

Those who feel the greatest sense of urgency may quickly dismiss many of the small beginnings described in this book. In fact, the changes described here are all of the incremental variety, and only Meyer and Jamieson even hint at the necessity for more radical changes. Yet an integral view of the chapters suggests that the small as much as the larger changes are needed. Quick, superficial changes may be necessary to ready a society for larger, deeper changes when the window of opportunity suddenly opens. None of us knows on which pathway societal transformation will eventually converge. Novel ideas, innovations, and momentum-building, rather than premature selection and channeling, are required at this stage. We also know that decisions that create long-term path dependencies will serve as

hindrances to societal transformation.⁴ Thus, any decisions or actions that lock us in, rather than open opportunities and maintain flexibility (ranging from the building of power plants to how we educate our children) should be assessed very carefully, conscious of their long-term impact on climate and society.

Outlook

The growing body of scientific (and popular scientific) literature on how societies throughout human history have fared in the face of emerging large-scale crises (e.g., Tainter, 1988; Diamond, 2005; Lovelock, 2006; Schellnhuber *et al.*, 2006) places today's encouraging societal trends as well as the discouragingly slow changes in an appropriate light. Whether or not any one civilization sustains itself over time appears to be linked to its ability to remain resilient in the face of environmental stresses such as climatic change, maintain good neighborly relations, and respond effectively and in time to signals of deterioration or threat from the environment. These, in turn, all deeply depend on social capital (e.g., Ostrom, 1990; Adger, 2003; Lehtonen, 2004; Pelling and High, 2005). This book gives ample reason to believe that we can further build momentum and plow the ground for even bigger shifts in how we communicate and act in the face of momentous social and environmental change. Thus, despite serious signs emerging from climate science, for us, this is *not* the time for hopelessness or despair, but a time for deep concern, creative engagement, and informed, committed and forward-looking action.

Conclusion: promising research directions and action steps

In preparation for writing this chapter, we asked our contributors to suggest critical research questions and action steps emanating from their chapters. Their diverse, helpful, and hopeful input suggested to us categories of research directions and practical steps that seem fruitful pursuits in the future.

Promising research directions

The challenge, need, and opportunity for greater multi- and interdisciplinary research on communication and social change

Multi- and interdisciplinary endeavors such as ours share one common challenge: some of the research questions we ask simply reflect that we

Jack certain insights that another discipline may already hold, and that would greatly advance our own if integrated. The benefits of mutual education and eventual integration are beyond measure. While in-depth disciplinary research will always be needed, more interdisciplinary research along the communication–social change continuum would greatly speed up our understanding.

*The need for practice-oriented social science research,
communicated effectively*

If we have learned one thing during this project, it is that social science is not any better than physical science in sharing its insights with the practitioner community. Not surprisingly, then, several of the questions our practitioner contributors asked reflect what they need from social science and economics. In short, there is a great need for “use-inspired research” (Stokes, 1997) in the social sciences, and for social scientists to effectively communicate those insights to practitioners.

Maybe at the top of their list is economic information, in particular the cost of inaction. When making the case for why to spend money “up front,” having specifics on the costs of not acting would help them be more persuasive in the language that communities, businesses, and even individuals speak. Other practitioners request related information that would quantify the co-benefits of taking action. Incentives for action on climate often overlap with other benefits to communities, such as reduced traffic, greater cost savings and efficiency, or better quality of life. These co-benefits are often of primary importance to motivating action on climate change (e.g., Young, Watrous and Fraley, duVair *et al.*). Communities do not generally have the resources or staff to analyze and compare the benefits and tradeoffs of various options for action. Thus, research of this sort would be useful for communities and actors on a wide variety of scales.

*Comparative and cross-cultural studies on communication and
social change*

While this book is almost exclusively focused on the United States, several contributors rightly point to the need for cross-national, cross-cultural comparisons of communication and social change efforts, and of societal responses. The overarching intent, of course, is to determine which of the insights presented here hold across contexts, which are more context-specific.

Advancing our understanding of climate change communication

Some of the insights from our contributors converge on fairly consistent messages about communication for social change. Others have not yet been widely applied, and still others are brought to the climate change table from very different contexts; thus we cannot be confident that they apply and work. The next stage of research should test these claims rigorously. For example, what is the right balance of fear appeals versus positive messages, of emotional and rational/cognitive messaging? How much knowledge of climate change is necessary, how much detail is too much, and when does it become a hindrance to action?

We also need rigorous testing in pilot campaigns of the proposed mental models and different frames (including the messengers who might deliver them). Which work best for which audiences? Are there any models and frames that work for all audiences? Do the insights from health psychology hold for climate contexts? Can we say more about the relative impact of different communication channels, including the dialogue format, on understanding, motivation, and behavior change?

Parallel to the cross-national, cross-cultural comparison mentioned above, several contributors suggest a cross-social group comparison on all of these issues. Is belonging to a particular social or cultural group or "interpretive community" more important than standard demographic variables such as gender, age, ethnicity, or economic status?

Finally, our contributors identified the need for a range of appropriate and meaningful metrics by which to judge the efficacy of our communication efforts. With an increasing emphasis on accountability in both government and business, evaluating programs' effectiveness becomes critically important. Moreover, metrics of the success of communication must be linked to the social changes they are meant to motivate.

Advancing our understanding of motivations

Advances in understanding people's motivations will come from rigorous testing of the diverse and differentiated insights generated by our contributors. For example, what combination of factors motivates and sustains behavior change in different social groups, cultural cohorts, interpretive communities, or even specific neighborhoods and localities? The psychological landscape of individuals' responses to the climate change problem has barely been explored and promises fundamental new insight. Our contributors raised another intriguing question, namely "what does it take to make new behaviors 'stick'?" given the long-term commitment necessary

for climate protection? Furthermore, are there any patterns as to who the “influentials” are (for different groups in society)? This would help us identify them and what might be most “persuasive” to different audiences.

*Advancing our understanding of resistance and
barriers to climate action*

Practice-oriented research identifying barriers in specific situations is much needed. For example, cities are interested in knowing which mitigation strategies are most important at their scale, given limited resources and limitations imposed from higher levels of government or regional development trends. They need help in tackling these obstacles. They also want to understand how much of the populace must be educated and engaged to move forward with climate change.

Another set of questions raised focuses on patterns of barriers in social change: are there specific barriers that are especially important at different stages of social transformation, and what support is needed to overcome them? How do we build capacity to think about climate change, to communicate it, to empower people, to facilitate change? If fear appeals or traditional outreach campaigns are limited in their effectiveness, which of the suggested alternatives are better in “getting through to people”? Finally, while numerous scientific efforts are under way to develop metrics of progress toward sustainability, most of these have not reached the practitioner community. Metrics are needed that are meaningful to those who are making changes to provide periodic feedback and encouragement along the way and to serve as an evaluative yard stick to allow for mid-course corrections. As one of our contributors argued, “What gets measured gets done.”

Useful action steps

What becomes implicitly apparent in our chapters is that the hallmark of pioneers is their political courage, creativity, staying power, and resourcefulness. Moving forward strategically and effectively will continue to require just that. In support of social change agents and communicators, our authors offered the following suggestions.

*Clearinghouses and active networks for sharing insights, strategies,
challenges, and successes*

Our contributors agree that communication in formal and informal networks helps learning, spreading of innovations, and providing mutual support.

The most frequent suggestion for future actions is thus a call for more sharing of insights and resources. "Tell me what worked in your situation!" This was also the greatest benefit to those who participated in the workshop that started this project. Many existing networks already serve this function, or could be connected, but more diverse and unusual encounters will have to be created. Perhaps one such idea would be to develop climate sister city programs (parallel to other sister city programs already widely implemented). They would help raise awareness of climate change impacts among the sister city residents, stimulate discussion, foster amicable bonds across the planet, and serve other educational purposes.

Training communicators, expanding the messenger pool

Small efforts already under way in the United States to train individuals to communicate climate change effectively⁵ need to expand significantly, beginning in elementary school and becoming embedded in professional training (e.g., for scientists, journalists, NGO staff, and outreach experts).

Many contributors, however, add that such training efforts should go beyond the typical communicators and messengers of the past. One, for example, suggested training "regular folks" to become "street communicators" in neighborhoods and communities which the traditional communicators just don't reach. Another idea is training "climate (or sustainability) ambassadors" who could carry ideas and solutions (including hard financial figures on what the actions cost and what they saved) from company to company.

Vastly expanding and testing diverse communication efforts

Governmental or non-governmental organizations in other countries are currently developing or launching major communication campaigns, for example in the UK, the Netherlands, and Australia. No such concerted effort is currently under way in the United States but would be desirable. Our contributors suggested not a single-focused traditional mass media campaign, but sophisticated efforts that would consist of various elements, including campaigns focused on health, creating a "brand," or a solution-oriented "action step" campaign. Any campaign would need to carefully test, evaluate, and adjust these different approaches and associated messengers, and then use them extensively over time.

If our ultimate goal is to reach the widest group of people, especially the younger generation, we will need diverse, innovative, and more accessible communication approaches (e.g., various forms of popular, street, and higher art, and the new media). This would also include creating numerous small

forums for dialogue and begin the visioning that will be needed to keep going over the long term.

Working across the boundaries of social divides

The most interesting developments in terms of communication and social engagement at present are those that cross common societal divides. Indeed, these “boundary-crossing” efforts spread the word to groups heretofore untouched by finding common ground and common language; they enlarge the engaged population, and allow change agents to tap into a richer set of assets and resources. Through broadening the constituency, they also increase political pressure. Thus, strategically focusing efforts on crossing these divides, consciously reaching out to the “odd bedfellows,” will help moving us along the S-curve.

Attending to the need for deeper social changes

Finally, there is a temptation to focus on the smaller easier changes in part because they are useful ways to get a foot in the door with the more skeptical population. Several of our contributors suggest, however, that it is important not to neglect the larger, deeper, more difficult changes, such as our political, electoral, and education systems. Sometimes the most ambitious goals are excellent motivators (e.g., “Let’s be the first to put a man on the moon”). For example, under the pressures of attaining educational standards, maintaining funding, and the day-to-day challenges of schooling, many educators and policy-makers have yet to realize how critically important changes in this area might be to adequately prepare young people for the challenges of a world under the pressures of climate change.

At our workshop, Bob Kates reminded us of the old adage that “perfection is the enemy of the good.” As we contemplate how to move forward with the wealth of insights and the many more questions that this book holds, we couldn’t agree more. The issue of climate change is too important to wait for perfection in how we communicate global warming and facilitate effective societal change to the problem. But there is ample room for improvement and we hope that this book offers some useful steps in that direction.

Notes

1. See Agyeman *et al.* for more discussion on this issue. In some cases, communities trust people who are similar to themselves more than people who are different.
2. Our underlying understanding of social capital is captured well by Daniel, Schwir, and McCalla (2003), who define social capital as a “common social resource that facilitates information exchange, knowledge sharing, and knowledge construction

- through continuous interaction, built on trust and maintained through shared understanding.”
3. For more information, see <http://www.ci.seattle.wa.us/mayor/climate/>; accessed February 10, 2006.
 4. In fact, many would argue that this dual approach is consistent with the precautionary principle, even if to some of its staunchest defenders precaution in the face of potentially dangerous climate change might require far bigger effort (e.g., Harremoës *et al.*, 2002).
 5. See, for example, <http://www.greenhousenet.org>; accessed March 5, 2006.

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