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Risk Communication for Emerging Technologies: A Mini-Roadmap

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Overview

This document summarizes the results of a workshop on risk communication that took place in January, 2009, involving participants from across North America but concentrated in the Western U.S. The workshop considered risk communication challenges and opportunities across a range of technologies and strategies. The discussions suggested that potential synergies exist across risk-related topics, as well as across disciplines, and highlighted the need for constructing opportunities for members of this research community to exchange ideas and results on an ongoing basis.

Introduction

This report summarizes the workshop discussions among a broadly interdisciplinary group of faculty and graduate students who met at the University of Nevada, Las Vegas (UNLV) on January 8 and 9, 2009, to consider a research agenda for risk communication that is concerned with emerging technologies. (See Appendix for complete list of attendees and contact information.) This workshop was sponsored by the National Science Foundation¹ with additional support from the UNLV School of Journalism and Media Studies, and it focused on three areas of technology considered as informative cases: nanotechnology, synthetic biology, and climate change. While the latter is not an emerging technology per se, it presents a crucial set of risk communication issues closely related to the societal adoption and use of technology. The intent of the workshop was to explore whether important research questions within or across these three areas can be identified. This research in turn built on an earlier workshop that had been hosted at the University of South Carolina two years earlier.

The workshop, formally titled *Communicating Emerging Technologies II: Communicating Risks and Uncertainties*, began on the afternoon of January 8 with a keynote presentation by Paul B. Thompson, W. K. Kellogg Chair in Agricultural, Food and Community Ethics, on the ethics of risk communication. Edna Einsiedel from the

¹ Under Nanotechnology Exploratory Research grant number _____, Susanna Priest, PI.

University of Calgary followed with a presentation on the concept of public consultation as applied to technology-related risks. Finally, John Besley from the University of South Carolina presented his perspective on the state-of-the-art of research on public engagement more generally. These presentations were designed to encourage participants to think broadly about the relationship between public engagement activities, public opinion formation, and risk communication.

The second morning (January 9) we reconvened to consider the risks and uncertainties presented by our special-focus cases, with discipline-specific experts presenting on nanotechnology (Vicki Colvin from Rice), climate change (Thomas Piechota), and synthetic biology (Michele Garfinkel, Venter Institute). Sharon Friedman from Lehigh University and Michael Cobb from North Carolina State also presented their work on media coverage and public opinion formation specifically for nanotechnology. A primary purpose of these presentations was to set the stage for subsequent small-group discussions designed to generate a research agenda surrounding communication of risks and uncertainties in these and other areas. Participants were assigned (based on stated preferences) to one of three group discussions held on nanotechnology communication research, climate change communication research, and public engagement research, respectively. The main purpose of this short report is to make a summary record of the ideas put forth by these groups.

Nanotechnology discussion

The nanotechnology discussion yielded a number of broad recommendations, several of them involving a perceived need for researcher-driven standardization of methodology for studying public trust, public opinion, and media coverage. These recommendations were summarized for the larger group in terms of the following goals:

- Develop a standardized list of questions (involving, e.g., attitudinal and cognitive factors such as trust and knowledge) that can be used in a number of empirical contexts, such as deliberative activities, in order to make possible longitudinal comparisons across a larger population;
- Develop a set of outcome measures for evaluating public participation events that would best capture the idea of what constitutes a “good” outcome for these activities; and
- Develop a strategy for extending content analysis in a “web world” that could deal with visual content in diverse contexts such as advertising and entertainment programming, as well as text-based content and news.

The general sense of the group was that efforts to study evolving social response to nanotechnology are spread across many smaller studies that could be of more value if they better lent themselves to meta-analyses by the use of consistent measures. This effort could help better coordinate work being done in public trust, public opinion, and media

and create a needed form of research infrastructure that would extend across institutions, while clarifying and articulating goals (such as the purpose of public participation). The implication was that these efforts are currently scattered and perhaps not as effective as they could be with more active attempts to link them.

Other items of discussion included the need for research related to the role of communication in the legitimization over time of nanotechnology as a field. This could extend to analysis of the different views of nanotechnology held by different scientists, including comparing the views of those who do basic materials science research (for example) versus those who do environmental or health toxicology research related to the new materials developed. A need was also seen for developing risk communication strategies that would stress safety and be targeted at scientists and engineers, including those in the academic world as well as industry.

Climate change discussion

This group considered quite a broad array of questions, primarily surrounding what we still need to understand in the area of climate change opinion and attitude formation in order to make progress in this area. The items that were generally the subjects of the most discussion are those listed below:

- Does the public have to understand climate change in order to deal with it? Several group members noted that the public does not necessarily have to understand climate change in order to be persuaded to take action; awareness appears to be a more important, and this conclusion has important implications for communication. Civilization may not be well equipped to deal with the future consequences of climate change.
- Should scientists create policies or simply inform others of the science? The role of scientists in society is a longstanding ethical debate but is receiving more attention with respect to events such as Hurricane Katrina that have demonstrated poor links between science and policy. If scientists are to better communicate with the public they need to be trained to do so, and graduate education for scientists should include these skills.
- What is the role of scientific information in communication about climate change? Al Gore's documentary "Inconvenient Truth" made use of scientific information, although Gore himself is not a scientist. While the use of science adds validity to discussions about climate and raises awareness, the central focus may need to be policy. Linking back to the first point, resolving and then communicating the science of climate change may not be enough.

All of these questions are closely interrelated. The group seemed to focus on the issue of the appropriate and ethical role of scientists and scientific information in policy debates about what action to take in the face of emerging climate change. The American public

was seen by this group as not engaged because they conceptualize the effects of climate change as being far in the future. Journalists were seen as putting too much stress on mitigation and not enough on adaptation, with social justice issues underreported. And despite extensive efforts by scientists to explain the science, there was the sense that this might not be having the desired effect.

Finally, the group pointed out that while climate change is not easily communicated, certain issues are more likely to resonate with the public than others and capture public attention. For example, trends such as the drought in Georgia seem to capture the public attention, whether or not connected with climate change in people's minds.

Public engagement discussion

The third group considered the current status of research on technology-related public engagement activities. These activities have received a great deal of recent attention as a possible set of strategies for encouraging "upstream" public discussion of emerging issues that might take place while policy is still being formed. The US National Nanotechnology Initiative accords public engagement a prominent place in its plans to encourage the development of nanotechnology and nanoscience. And public engagement undoubtedly has a key role to play in developing meaningful policy responses to climate change, as well as encouraging thoughtful consideration of newly emerging technologies such as synthetic biology.

This group discussed three specific ways in which this research could move forward:

- More comparison studies across different types of engagement (science cafés, citizen juries, consensus conferences, and so on) and topics of discussion need to be implemented to determine what approaches work best under what circumstances. Both goals and limitations need to be more carefully articulated for these activities, however; in addition, we don't know enough about what messages and strategies work best to connect with publics outside academic settings.
- New funding sources for this research need to be identified. While most existing research projects in this area are largely academic rather than practical in nature, the field also has a strong applied dimension. Although questions might be raised about the university's role in this regard, this applied dimension may suggest alternative funding sources that should be explored. Should industry, local government, or other community groups help fund this activity?
- Public engagement communication is generally conceptualized as two-way in nature. More research activity needs to concern the changes in perceptions and attitudes that occur for experts who are involved as presenters or in other roles and their motivations for participation, rather than always focusing entirely on non-expert engagement and its impact.

The group also pointed to the need to better understand the nature of group decision-making processes, to look at past risk communication situations for lessons learned, and to look for broader impacts beyond those who participate directly (i.e., do people talk to others about the experience, might news media multiply the impact, and so on). Although organized for distinct purposes, models pioneered in other fields such as the creation of citizen/stakeholder panels for consideration of environmental policy might also be instructive.

Conclusions across the groups

Although the three groups were quite different and very different themes emerged in the three discussions, commonalities and connections are apparent. In particular, the need for standardized outcome measures that was identified in the nanotechnology discussion parallels the need for more systematic comparative research that was identified in the public engagement discussion. Also, the need to think more about the role of scientists and scientific information in public policy discussions that was highlighted by the climate change group resonates with the point from the public engagement discussion that the perceptions and attitudes of scientists, not just “the public,” are important.

These discussions suggested a need for better networking and data-sharing among researchers dealing with different types of risk communication situations, whether this means different types of communication strategies (e.g., forms of public engagement) or different risks (nanotechnology versus climate change). The fields of risk analysis and risk communication are recognized as broadly interdisciplinary; however, funding sources often force researchers into new “silos” based on involvement in solving particular risk communication problems that replace older discipline-based silos but may be almost equally restrictive.

On a more positive note, however, the discussions went a long way toward identifying synergies and opportunities that cross cases and topics. Further effort should be devoted to creating ongoing opportunities for sustained interaction within the community of social science researchers concerned with understanding how discussions of risk may mediate the relationship between technology and society.