

What is risk communication?

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People have always been concerned about the activities, conditions and materials that place their lives or well-being in peril, individually or collectively. Along with the exponential growth in the number and complexity of risks has come a rapidly increasing need to communicate about these risks. Federal regulations have served to increase the volume of risk communication, but the arcane world of risk analysts who work with decision trees and conditional probabilities is very foreign to citizens who must decide whether it is safe to feed their families genetically modified food, for example. Yet citizens are finding themselves drawn into that world with increasing regularity. Because we live in a democracy built upon Jefferson's vision of an informed electorate, it is of great importance that risk information be made accessible to the citizenry. The noted risk expert M. Granger Morgan (1993) comments:

Implicit in the process of risk analysis and management is the critical role of communication. If public bodies are to make good decisions about regulating potential hazards, citizens must be well informed. The alternative of entrusting policy to panels of experts working behind closed doors has proved a failure, both because the resulting policy may ignore important social considerations and because it may prove impossible to implement in the face of grass-roots resistance (p. 43).

The importance of the task of risk communication is clear. Less clear, however, is the meaning of the term risk communication itself. Risk communication has been a topic of formal study only since about 1986. It has various origins in the domains of communication studies, public health, psychology, sociology, risk analysis, policy studies and political science. As such, it embodies all the tensions of an interdisciplinary topic. These tensions are played out in disputes between different research traditions over fundamental questions regarding risk perception and the essential nature of human rationality.

Because of the complexity of risk communication, a variety of definitions have been proposed. To Cole and Whitney (1981), the term has both a conventional and symbolic meaning. In its conventional meaning, which reflects the use of the word in risk management, risk communication is the transmission of technical or scientific information from elites to the general public. In its symbolic meaning, which derives from the role of risk in political discourse, risk communication can refer to any public or private communication that informs individuals about the existence, nature, form, severity, or acceptability of risks.

Lopes (1992) offers a more environment-oriented application: “risk communication is the act of conveying or transmitting information between interested parties about (a) levels of health or environmental risks; (b) the significance or meaning of health or environmental risks; (c) decisions, actions, or policies aimed at managing or controlling health or environmental risks. The interested parties in this process include government agencies, corporations and industry groups, unions, the media, scientists, professional organizations, public interest groups and individual citizens” (pp. 63-64).

Morgan (1993) advocates a broader view. To him, “risk communication is an “interactive process of exchange of information and opinion among individuals, groups, and institutions. It involves multiple messages about the nature of risk and other messages, not strictly about risk, that express concerns, opinions, or reactions to risk messages or to legal and institutional arrangements for risk management” (p. 35).

The National Research Council (1989) takes the extra step of distinguishing between risk messages and risk communication, defining the latter as a “an interactive process of exchange of information and opinion among individuals, groups, and institutions” (p. 2). Many (i.e., Covello, et al., 1986; Slovik, 1987), however, define risk communication as the relaying of any interpersonal or mediated message that contains information about the existence, nature, severity, or acceptability of a risk. Because risks are ubiquitous, we confine our discussion here to scientific and technological risks and use risk communication to denote communication activities in the scientific and technological domain.

The dimensions of risk communication

From these early definitions alone, it is clear that the meaning of risk communication has become diffused and multidimensional so that deriving a concise definition is a non-trivial assignment. Plough and Krinsky (1987) did a good job of laying out the various dimensions of this concept. In an effort to organize this field of inquiry, they identified four important categories of risk communication studies and propose a fifth. First, there are studies looking at how the mass media transmit risk messages to the general public. Another group of studies examine the various mechanisms behind the perception of risk. An important result of this work has been the

identification of the constructs of objective and subjective risks. A third category concerns itself with the pragmatic demands of those charged with communicating risk. This thread has yielded methodological and communication campaign guidelines. Fourth, a systems perspective on risk communication has arisen from work in engineering, information theory and cybernetics. Another approach to understanding risk communication draws from sociology and anthropology. This tradition “treats risk events as comprised partly of physical processes and partly of socially constructed phenomena. The assessment, interpretation, communication, and response to such events are examined in their social context to obtain a full accounting of the factors involved.”

Because risk communication involves a wide variety of approaches and applications, it must be seen as a multi-dimensional construct. Krinsky and Plough (1988) identify five dimensions to the concept. First, the nature of the *intentions* behind the risk message must be considered. Messages can be essentially without goals or can have high expectations for specific outcomes. Second, the *content* of the risk message is highly variable, running from the more narrow focus on health and environmental messages to wide-ranging social concerns. The *audience* for which the message is intended must also be considered: sometimes targeted sometimes not. A fourth dimension involves the *source* of the information. Frequently this involves scientists and other technical experts, but it can also include a much broader source involving the media and citizen groups, for example. Finally, the *manner in which the message travels* should be considered. Risk messages can be specifically delivered through very restricted channels or can flow freely through society.

The dominant paradigms

These various dimensions of risk communication speak of the difficulty of the risk communicator's task—to transfer information from the expert sphere to the public sphere where it can be acted upon in a democratic fashion. Considering the schism between expert and lay evaluation of risk from a communications perspective should elucidate the magnitude of the problem at hand: sender and receiver do not speak the same language. Heaped on top of this complexity are the inherent difficulties surrounding public communication.

Despite the considerable depth to which knowledge extends concerning risk analysis and risk perception, relatively little theoretical basis has been utilized in the communication of risk messages. This fact is witnessed by the only very recent (and explosive) growth of the field of “risk communication.” Risk experts are only now, after countless years of actually communicating risk, beginning to see the communication process as something worthy of consideration in the same depth as risk analysis itself.

Leiss and Krewski (1989) offer a look at three dominant communication paradigms that exist in the risk literature: the information flow model, the message transmission model, and the communications process model.

In the *information flow model* (also called the institutional model), the emphasis is on the flow of information among “institutional actors.” It features two-way exchanges among industry, researchers, and government, the primary areas of interest in the model. Secondary to this arena of information exchange are one-way communications from each of these actors to the media and to the public, both directly and through the media. The information flow model is legalistic in nature. Here, risk communication is motivated by a desire to evade liability for claims based on an unfulfilled right to know.

This perspective says much about what has been wrong about risk communication. First, the model fails to contemplate audience characteristics that impact the reception of the message. Second, it describes the pathways of communication, but not the message that must travel those pathways. And most problematic is its assumption that communication to the public and the media can be unidirectional. This model clearly exemplifies the “we’ll decide what’s important and tell you” attitude that has pervaded many risk communication efforts.

The *message transmission model* is described as a “well-known engineering theory of communications” that most closely resembles the defunct hypodermic effect well-known in mass communication. In this case, the message is likened to an electronic signal that must be generated by a source, transmitted through a channel and received by an audience group. The model is strictly unidirectional, its chief weakness. The primary strength of the message transmission model is its ability to isolate components of the communication process and examine them for potential problems, just as one might examine a circuit board. Message problems entail the basic understanding of the risk and the concepts used to describe it. Source problems would include expert disagreement and the use of bureaucratic or technical language in communication. Channel problems are conceptualized as arising due to bias, selectivity oversimplification and inaccuracy in mass media reporting on risk. Receiver problems are associated with lack of interest by citizens in the risk message, their inability to understand the risk message, and the holding of change-resistant beliefs and attitudes.

Leiss and Krewski (1989) propose a union of these two models into a more encompassing framework, which they call the *communications process model*. Their

model divides the world of risk into two domains, that of technical risk and that of perceived risk. The former is the world of the risk expert, the latter the world of the media and the public. Communication processes generally occur in two forms—exchanges within each domain and exchanges between the two domains; the government exists simultaneously in both domains. An important insight built into this model is its recognition that each domain employs a unique language and the chief source of difficulty in risk communication involves the exchange of information between the two domains. Another strength is its recognition that risk messages are not unidirectional in nature, but involves an exchange between and within each domain.

This unified model takes advantage of the many insights available in the mass communication literature which Dunwoody and Neuwirth decry as having been largely ignored by researchers studying scientific and technological risk perception:

...we do note that research across a number of theoretical perspectives tends to find that: individuals are active selectors and processors of information; they use different information channels for different purposes; they attend to information in those channels with varying levels of intensity; they may interpret information available in different channels as differently applicable to self or society; it makes sense to distinguish between cognition and affect when trying to determine how people think about conundrums in their lives, ranging from selecting a presidential candidate to deciding what to make of radon; and information may influence those cognitive and affective dimensions differentially” (p. 11).

Indeed, a consensus is well established that theory should be used to inform the practical matter of crafting risk communication, and that theoretical evaluations of risk

perception and risk communication should primarily address how messages move through the world and what their effects are. Pragmatic concerns have been the focus of much of the risk communication literature, atheoretical as it may be. But utilized in conjunction with a theoretical perspective, this body of work offers some guidance for the communicator in need of working with risky material.

Implementing risk communication

Risk communication is a challenging endeavor. As researchers have considered the intricacies of risk communication they have identified a number of general tasks, difficulties and paradoxes that tend to face risk communicators. Fisher (1991) identifies three varieties of challenges. First, the risk communicator must clearly define the objective of the campaign, embrace the importance of campaign evaluation and realize that no communication effort is ever completely effective. Then, it is critical to make a concerted effort to make the science of the risk assessment accessible to the audience. And finally, the perspective of the audience must be considered and entered into the whole risk equation because public reaction invariably becomes intertwined with the risk condition itself. To meet this third challenge, risk communicators must work more closely with the risk assessors and risk managers that generate the initial constructs of the given risk.

One of the most important tasks is to establish credibility. Credibility can be hurt when the audience perceives the message to be inconsistent with the facts or inconsistent with previous messages, when the messenger has a reputation for deceit or when the expert sources appear incompetent or in disagreement. The audience's evaluation of the overall legitimacy of the risk issue also impacts credibility. Components of this

dimension include the legal justification of the definition of the risk and the subsequent justification of the message, audience involvement in the process of risk definition and audience perception of balanced arguments concerning the evaluation of the risk.

A consistently difficult task of risk communication involves getting the public's attention. Researchers have found that often the individuals that need the risk information the most are also the ones who are least likely to attend to the risk message. This situation significantly enhances the potential for knowledge gap effects concerning risk issues. Because of this potential, communicators must pay close attention to their choice of communication medium.

Research and practical experience with risk communication have illuminated many problems and paradoxes associated with the practice. Much of this information can be distilled in to a body of "conventional wisdom" on risk communication. Taken together, these gems of conventional wisdom offer some insight into how an effective risk message should be formulated. The NRC risk communication review outlines some of the more important aspects of the content of risk messages. They point out that the needs of specific risk issues will strongly dictate the shape of the message. Nonetheless, there are several concepts that apply across a broad range of topics.

■ Risk messages should be crafted to show the personal relevance of the risk to the individual. Risk information arises from the opinions of experts and often persists in terms of their vocabulary. This kind of information needs to be translated into advice for the individual concerning safety measures, political activity, self-evaluation for membership in risk groups and strategies for further information gathering.

■ Great effort should be made to make the message accessible to the audience in terms of clarity. Avoiding technical terms and numerical data in favor of concrete examples and vivid imagery serves this purpose well.

■ Care should be taken when formulating a risk message to maintain sensitivity to the concerns of the audience. Failure here can lead to audience alienation. This becomes especially important when widespread misconceptions need to be dispelled. Misconceptions are best addressed directly and corrected in a non-judgmental way, rather than being written off.

■ The distinction between informing and influencing must be kept in mind throughout the execution of a risk message. In this age of advertising, the public is quick to identify a message that is designed to influence, and they do not expect or respect such messages from official or governmental agencies.

■ Uncertainty virtually defines risk. Uncertainty over risk arising from imperfect data and expert disagreement should be tackled head on. However, a balanced approach is best. Public distrust rapidly manifests itself in the presence of attempts to either exaggerate or minimize uncertainty. Clearly, uncertainty is an aspect of risk communication that most makes the process political. Often, differing viewpoints seek to take advantage of polar arguments in order to sway an issue in their political favor.

■ Completeness is a key ingredient in any risk communication effort. The NRC review points out that a complete risk communication information base contains five kinds of information: (1) the nature of the risk, (2) the nature of the benefits that might be affected if risk were reduced, (3) the available alternatives, (4) uncertainty in knowledge about risks and benefits, and (5) management issues.

These general guidelines for the creation of risk messages are based on many of the findings in the risk perception research. Taken together, and applied to the task of message design, these findings can be simplified into a set of six general psychological principles that should inform the design of risk messages.

- People simplify. People cope with information overload by utilizing simplified constructs to evaluate complex problems.

- It is difficult to change people's minds. The desire for cognitive consistency is a fundamental attribute of the human psyche. This can lead people to selectively attend to information that only agrees with previously formed attitudes, to ignore any ambivalence in that information, and to become overly attuned to polarized arguments.

- People remember what they see. Thus, people evaluate many risks based on their personal experiences in life and the information they receive from the media. This can lead people to underestimate risks they have not personally experienced.

- People cannot readily detect omissions in the evidence they receive. This especially applies to the anecdotal evidence people gather through their daily lives. It also makes it possible to fool people through the use of omissions, the result of which is typically the eventual loss of all credibility.

- People may disagree more about what risk is than about how large it is. The difficulty of defining risk itself is socially and culturally bound.

- People have difficulty detecting inconsistencies in risk disputes. It requires a considerable level of attention and knowledge to keep abreast of some of the more technical risk arguments. Applying critical thinking skills to those arguments can be even

more daunting. Unfortunately, this leaves many members of the public vulnerable to manipulation.

Fundamentally, these guidelines can be distilled into a basic principle: The informed consent of the governed for the risks to which they are exposed is a laudable goal. However, its achievement requires that people have tolerable choices, adequate information, and the ability to identify which course of action is in their own best interests. The guidelines above serve to counter the top ten myths about risk communication with which practitioners are all too familiar:

1. We don't have enough time and resources.
2. Communicating with the public about risk is likely to alarm people unduly.
3. If we could only explain risks clearly enough, people would accept them.
4. We shouldn't go to the public until we have solutions to the problems.
5. These issues are too tough for the public to understand.
6. Technical decisions should be left in the hands of technical people.
7. Risk communication is not my job.
8. If we give the public an inch, they'll take a mile.
9. If we listen to the public, we will devote scarce resources to issues that are not a great threat to public health.
10. Activist groups are responsible for stirring up unwanted concerns.

Risk communication is clearly not a task for the faint of heart. It embodies all of the difficulties and opportunities for failure that plague purposive communication in general, difficulties that researchers have been acutely aware of since Lasswell's time

when it was first wondered why ideas could not be sold like soap. And risk communication bears a greater burden than many types of communication campaigns. The subject matter is invariably complex, mathematical, controversial, and impacts people's physical safety and health. No easy sell. In an evaluation of the conventional wisdom of risk communication, Johnson and Fisher (1989) conclude that, "In short, the conventional wisdom that risk communication itself is a complicated, hazardous undertaking is quite correct."

But effective risk communication can be achieved. By understanding the audience, the nature of the risk at hand, and the goals of the communication campaign, it is possible to craft messages and launch dialogues that responsibly serve all parties involved.

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