

Trust and Credibility in Risk Communication

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1. Introduction

Better knowledge about the potential impacts of human actions and behavior and the deliberate use of technologies with high catastrophic potential have encouraged modern societies to develop institutional responses to manage and regulate risks. Initiated by the heated debate about nuclear power, the political agenda has slowly moved from the paradigm of distributing wealth and income to a new paradigm focussing on the legitimization of major risk sources that have the potential to threaten human health and environmental quality. The question of how society copes with risk management has become a major topic of new sociological investigations (e.g., Beck 1986; Luhmann 1986; Perrow 1984). The traditional power struggle between left and right, which had dominated social processes and changes in the last decades, may gradually be replaced by a new confrontation between the industrial versus the environmental fraction, although right and left positions still cluster within the two new groupings (Huber 1984). In general a shift in political paradigms is accompanied by new social changes with respect to the distribution of social resources, in particular power, prestige, and trustworthiness, and social structures.

Risk communication occurs in a specific social and political arena characterized by high public interest in the subject as such (but not necessarily in every single risk), by political polarization for the special class of high-consequence, low-probability risks and by a strong symbolic representation of risk management for different value systems and lifestyles. In addition, the stochastic nature of the risk concept and a multitude of scientific conventions and models that are used in risk analysis and risk management, but are rather remote from common sense reasoning, have created a gap between the professional understanding of what risk and risk management imply and the intuitive perception of most lay persons.

Communication in such an arena faces many serious problems: How can a communicator justify the application of professional standards if these are hardly intelligible for most people and trigger anti-elitist resentments? How can a communicator deal with the typical condition of dissent in technical, social, and political communities about the seriousness of different risks? How can a communicator cope with the intuitive heuristics that govern people's processing of probabilistic information? How can a communicator establish an aura of credibility if s/he has a vested interest in the proposed acceptance of his or her message?

The following paper attempts to summarize the major findings of the psychological and sociological literature on trust and credibility, and to apply these findings to the specific arena of risk communication. We will present a few guidelines for risk communication that are supported by the basic literature and that appear appropriate for the social and institutional context in which the risk debate takes place.

2. A conceptual framework of trust and credibility

Before presenting the major findings of scientific research on trust and credibility, some of the terms used in this paper need to be explained. First, we like to specify what we mean by "risk communication", then we will discuss the various definitions of trust, confidence, and credibility, and finally we are going to introduce an analytical framework for studying trust in risk communication.

We adopted the definition of risk communication by Covello, von Winterfeldt and Slovic (1986). According to these authors risk communication can be defined "as any purposeful exchange of information about health or environmental risks between interested parties. More specifically, risk communication is the act of conveying or transmitting information between parties about

- a) levels of health or environmental risks;
- b) the significance or meaning of health or environmental risks; or
- c) decisions, actions, or policies aimed at managing or controlling health or environmental risks.

Interested parties include government, agencies, corporations, and industry groups, unions, the media, scientists, professional organizations, public interest groups, and individual citizens" (Covello, von Winterfeldt, and Slovic 1986, p. 172).

The definition limits the scope of risk communication topics to health and environmental aspects. This does not exclude the study of secondary and tertiary effects triggered by the communication process on health and environmental risks. On the contrary, the consequences of the communication effort in terms of psychological, social, and political repercussions are vital elements of the analysis of risk communication (Kasperson et al. 1988). The limitation refers to what is being communicated and not to the effects that the communication will initiate on social and psychological processes.

Among the stated purposes of risk communication, gaining or sustaining trust is one of the most frequently mentioned objectives (Kasperson and Palmlund 1987; Covello et al. 1986; Zimmermann 1987; Renn 1988). But most articles on risk communication do not elaborate what they mean by trust and which elements constitute a trustful relationship. We need therefore a better understanding of the meaning and implications of the term trust. If we consult the literature, we can find the following definitions:

- a) "the confidence that one will find what is desired from another, rather than what is feared" (Deutsch 1973);

- b) an "Actor's willingness to arrange and repose his or her activities on Other because of confidence that Other will provide expected gratifications" (Scanzoni 1979);
- c) "a generalized expectancy held by an individual that the word, promise, oral or written statement of another individual or group can be relied on" (Rotter 1980);
- d) "a generalized expectation related to the subjective probability an individual assigns to the occurrence of some set of future events" (Rempel, Holmes, and Zanna 1985);
- e) "assured reliance on a person or thing" (Webster's Third International Dictionary).

Apparently all definitions emphasize the reliability of information and the conviction by the receiver that the source of a message has given truthful and complete information. For our purpose of defining trust in the context of communication, we would like to suggest the following definition: *Trust refers to the generalized expectancy that a message received is true and reliable and that the communicator demonstrates competence and honesty by conveying accurate, objective, and complete information.* Although trust and confidence are often used interchangeable, confidence in a source can be distinguished from trust as a more enduring experience of trustworthiness over time. Accordingly *confidence denotes the subjective expectation of receiving trustworthy information from a person or an institution.* People have confidence in a source if their prior investment of trust in that source has not been disappointing over a longer period of time. If many persons share such a confidence in a communication source, they assign credibility to this source. So we can define *credibility as the degree of shared and generalized confidence in a person or institution based on their perceived performance record of trustworthiness.* All three terms imply a judgment of others about the quality of a message or a source. So they are all based on perceptions (Midden 1988). These perceptions, however, can be linked to special structural and performance characteristics of institutions.

To make these terms more operational, it makes sense to identify the major attributes that constitute trust, confidence, and credibility. The literature includes several approaches (Garfinkel 1967, McGuire 1985, Barber 1983, Lee 1986, Sheridan 1987). We decided to amalgamate some of the proposed suggestions from the literature and developed the following classification scheme.

Trust can be substructured in the following five components:

- a) *Perceived competence* (degree of technical expertise assigned to a message or a source);
- b) *Objectivity* (lack of biases in information as perceived by others);
- c) *Fairness* (acknowledgement and adequate representation of all relevant points of view);
- d) *Consistency* (predictability of arguments and behavior based on past experience and previous communication efforts);
- e) *Faith* (perception of "good will" in composing information).

Trust relies on all five components, but a lack of compliance in one attribute can be compensated for by a surplus of goal attainment in another attribute. If objectivity or disinterestedness is impossible to accomplish, fairness of the message and faith in the good intention of the source may serve as substitutes. Competence may also be compensated by faith and vice versa. Consistency is not always essential in gaining trust, but persistent inconsistencies destroy the common expectations and role models for behavioral responses. Trust cannot evolve if social actors experience inconsistent responses from others in similar or even identical situations.

Confidence is based on a good past record of trust-building communication. In addition, the performance of the source and its image with respect to its fulfillment of tasks and communicative functions are major attributes that constitute confidence. High social support for a source can serve as a reinforcement for generating and sustaining confidence. In addition, congruence of its goals and values with those of the targeted audience may enhance confidence (Luhmann 1973).

Both, trust and confidence, are necessary conditions for the assignment of credibility to a source. Credibility is a product of long term evidence and commonly shared experience that a source is competent, fair, flexible to new demands, and consistent in its task performance and communication efforts. Judgments about these criteria are based on social perceptions. These perceptions, however, are at least partially governed by structural factors, such as the success or failure in meeting the socially assigned roles and expectations and the institutional openness for public demands and requests. Thus it makes sense to distinguish between genuine perception factors (Image aspects) and structural factors (characteristics or properties of institutions that affect the social perceptions). All three, trust, confidence, and credibility, are also subject to the macro-sociological climate in a society vis-a-vis social institutions and their role for social cohesion (Lipset and Schneider 1983). This influence is independent from the actual performance or communication record of the source.

For analytical purposes it seems appropriate to differentiate between different levels of trust, confidence and credibility depending on the source and the situation. We developed therefore a classification scheme that is composed of five distinctive levels of analysis:

- a) *trust in a message,*
- b) *confidence in a communicator (personal appeal),*
- c) *confidence and credibility as a result of source perception (institutional image and prestige)*
- d) *confidence and credibility as a result of institutional performance (structural variables)*
- e) *the macro-social climate in which trust-building takes place.*

Each level of analysis is embedded in the next higher level. Consistent violation of trust building efforts on one of the lower levels will eventually impact the next higher level. Distrust on a high level sets the conditions and determines the latitude of options for

gaining or sustaining trust on a lower level. The order of levels is also associated with an ascending order of complexity and abstraction.

The levels of analysis enable us to identify the elements within each level that may contribute to trust, confidence, or credibility. Table 1 illustrates the key variables in each of the levels and shows their interrelatedness. The "message" rubric includes all the variables that influence the perception of competence, fairness, consistency, and faith. Personal variables, such as appearance, appeal, style, and responsiveness, affect the trust and confidence that a person conveys to his or her audience. Furthermore, institutional performance and image color the acceptance and evaluation of a message and influence the reception of the communicator by the targeted audience.

All variables that we identified as relevant on this level are summarized in the two rubrics representing image and performance of institutions. Last, the social political climate shapes the readiness of receivers to give credit in terms of prior confidence to a communicator. In times of predominant distrust in institutions, the expectation that communicators are trying to betray their audience is the default option in receivers' attitudes toward a communication source. Under such conditions, active trust management is certainly required. In times of a positive climate of confidence in institutions, trust is given as an initial investment or credit to new sources, but may easily be lost if abused.

3. Insights from psychological studies

3.1. Trust as prerequisite for social orientation

Interaction among individuals relies on a minimum of trust between the actors involved, at least to the point that they share a common meaning of the elements of the communication process. Thus trust is a prerequisite for any social interaction and at the same time a major mechanism to provide orientation in uncertain situations and to make the outcome of a communication more predictable. In this sense, trust is a medium to reduce complexity by limiting the scope of behavioral responses, but it is also a medium to enhance complexity because it entails a higher degree of freedom for behavioral actions without implying an extensive debate between the interaction partners about the legitimation or appropriateness of each other's actions (Barber 1983; Luhmann 1980).

By shortcutting normal control mechanisms, trust and later on confidence (based on positive experience with granting trust to a specific social actor) can be a powerful agent for efficient and economical performance of social tasks. Durkheim's analysis of organic solidarity as a major structural variable of modern societies focussed on trust as one of the the predominant media that helped to shape the division of labor and to differentiate societal functions (Durkheim 1933; Luhmann 1973). But trust provides also ample opportunities for misuse. Thus trust is permanently tested in social situations. If one set of actors feel that they have granted trust to another set of actors who misused this valuable social resource, a return to tighter control and explicit step-by-step management of task performance is likely to occur. The major factor of building confidence in a social actor is therefore experience of trustworthiness in the past.

The more people feel that their investment in the trustworthiness of a specific institution served them well, the more credibility this institution will gain over time and the more degrees of freedom it will have in planning and performing tasks, even if these are not immediately intelligible to the audience. In this respect, credibility helps institutions to develop and carry out their agenda without being forced to legitimate each step of action.

3.2 Psychological factors of trust and credibility

Psychological research about attitude and attitude change has shed some light on the conditions under which receivers of information assign trust or one of its building blocks, such as competence, to a communicator. These research results are usually discussed in the framework of persuasion: What elements of a message or a communication context is likely to enhance or diminish the persuasive effect of a message? What elements of the message are remembered and which trigger changes in opinions or attitudes?

Before reporting on some results of these studies, we should mention the restrictions and limitations of these studies to avoid misinterpretation (McGuire 1985; Anderson 1983; Meinefeld 1977). Most of the research in attitude change has been performed in laboratory settings with student populations. Most experiments were done with a limited set of issues or topics so that it is not clear whether the revealed relationships can be extended to other topics or audiences. Many experiments were conducted in the 1950ies and 1960ies, both time periods in which the social climate for trust and credibility differed considerably from today's climate. For example, experiments involving experts as communicators resulted usually in considerable persuasion effects in the early 1960ies while more recent experiments demonstrate more ambiguous results depending on the existence of a social controversy over the issue and the social perception of the expert's own interests (Eagly et al. 1981; Heesacker, Petty and Cacioppo 1983). But at the same time many of the research findings are consistent over long time periods and have been tested with a variety of subjects and topics (Chaiken and Stangor 1986; Eagly and Chaiken 1984). So they can be regarded at least as well founded hypotheses for application in risk communication until more specific research studies are conducted in this area.

The following review of research results is based on such experiments. For the purpose of this article, we will only present the conclusions and omit the methodology or design of these studies. Readers interested in a more detailed review should consult the respective review articles (McGuire 1985; Chaiken and Stangor 1987; Eagly and Chaiken 1984; specifically for risk communication Lee 1986). Among the factors that have been found to enhance the persuasiveness of a communication are:

- a) Attractiveness of information source: Attractiveness is composed of similarity of positions between source and receiver; likability of source; and physical attraction (Lee 1986; McGuire 1985; Chaiken and Stangor 1987).
- b) Sympathy or empathy of the receiver with the source: This refers to the possibility of a receiver to identify with the source or its motivations (Mc Guire 1985; Eagly and Chaiken 1984).

- c) **Credibility of source:** Among the components tested are perceived competence, expertise, objectivity, impartiality, and fairness (Lee 1987; Tyler 1984; Rempel and Holmes 1986).
- d) **Suspicion of honest motives:** Receivers do not detect any hidden agendas or motives behind the communication effort (Rosnov and Robinson 1967; Eagly et al. 1981).
 - dd. **High social status or power of communication source:** The effect of these two variables depend heavily on the issue and the composition of the audience (McGuire 1985; Chaiken and Stangor 1987; Lee 1986).

These factors seem almost intuitively plausible. A communicator is likely to leave a more lasting impression on the audience if the message appears honest, accurate, and fair and if the communicator is a likable person with whom the audience can easily identify. The more difficult question, however, is how a communicator can accomplish to impart these impressions on the audience under real life conditions. What do we know about the effectiveness of message composition and personal appeal that would allow us to tailor information programs to seek more persuasive power?

3.3 Message composition and personal appeal

(Un)fortunately, we do not have any recipes to enhance credibility or to increase the persuasiveness of a message. But psychological research in the past two decades have yielded some interesting, sometimes even counter-intuitive, findings that link specific aspects of message composition or personal style of communication with persuasive effect. These findings are summarized in Table 1 under the two rubrics of "message" and "personal factors". Some of the more counter-intuitive factors deserve special mentioning:

- a) High credibility sources, such as scientists or opinion leaders, produce more opinion change, but no difference in message learning. The learning of a message is more related to the similarity of the message than to existing attitudes and beliefs (Hovland and Weiss 1967; McGuire 1985).
- b) Perceived expertise depends on many factors. Among them are status, education, perception of technical authority, age, and social class. If expertise of a communicator is challenged in public, people tend to focus on substitutes for expertise, such as suspected interests or reliance on reference group judgments (Heesacker et al. 1983; Renn 1984).
- c) Stating explicitly the persuasive intent is usually more convincing than hiding such an intent and leaving it to the audience to make their own inferences. People like to know what the communicator wants them to believe. If it is not openly stated, they will suspect a hidden agenda (Lee 1986; McGuire 1985).
- d) Fairness and social status are both variables that can compensate lack of objectivity. Even if people are aware that the communicator has a vested interest in the issue and that s/he argues from a specific viewpoint, they may trust the message or develop confidence in the communicator provided that the information presented

appears to be fair to potential counterarguments and that it is presented with technical authority (Lee 1986; McGuire 1985).

- e) Being explicit in the conclusions and presenting counter-arguments to potential objections has been proven more effective than operating with implicit conclusions or presenting only one side of the story. The two, often conflicting goals, of fairness to the opponents of the communicator's view and of honesty about one's own motives have to be reconciled in each communication effort in order to be most persuasive (Lee 1986; McGuire 1985).
- f) The perception that the goals and motives of the source serve a common interest or refer to highly esteemed social values, such as protection of the environment or public health, enhances public confidence in the communicator, but reinforces distrust if the task performance of the communicator is perceived as weak. People invest more trust in these institutions in the beginning, but tend to be more disappointed if the outcome did not match their expectations (Tetlock 1986).
- g) The agreement to listen to disliked sources increases the probability of attitude change. Although likableness of a source usually enhances the persuasive effect, the mere acceptance of listening to a non-likable source may motivate the audience to focus on the message instead of the source of communication. The psychological mechanism involved here is called avoidance of cognitive dissonance (Festinger 1957). One can only justify to spend time with a disliked source if at least the message is worth the effort. However, the motivation to engage in communication with a disliked person may also serve as a reassurance of how bad the source and the message are. Which of the two reactions is likely to emerge as a result of a communication with a disliked source? This depends on the degree of commitment to one's previous attitude, the strength and salience of the attitude with respect to other beliefs and values, and the perception of vested interests of the source (Fazio et al. 1977; Chaiken and Stangor 1987).

All these insights are helpful to design communication programs and to train communicators for their task. But it should be kept in mind that most of these results were accomplished in rather artificial laboratory environments and may not be valid for the specific risk communication arena. Risk communicators who are familiar with the persuasion literature have assured us, however, that many of the findings from persuasion research match very well their personal experience with risk communication. So these studies can provide some helpful clues of how to design a more effective communication program and may serve as a starting point to conduct more specific research projects on trust in risk communication. In the chapter on risk communication we will return to these findings and develop some guidelines for risk communicators.

3.4 The elaboration-likelihood model of persuasion

In addition to the "clinical" experiments that test the influence of different communication variables on persuasiveness, several theoretical models have been proposed to provide a conceptual framework for interpreting these results. In this context, we would like to present one model, the "elaboration-likelihood model of persuasion", developed by Petty and Cacioppo in the late 1970ies (overview in Petty and Cacioppo 1986). In

spite of its recency, this model has been extensively reviewed by social psychologists and received many favorable comments (Chaiken and Stangor 1987; Eagly and Chaiken 1984). In addition, C. Middenhas explicitly recommended this model for application in risk communication (Midden 1988).

The major component of the model is the distinction between the central or peripheral route of persuasion. The central route refers to a communication process in which the receiver examines each argument carefully and balances the pros and cons in order to form a well-structured attitude. The peripheral route refers to a faster and less laborious strategy to form an attitude by using specific cues or simple heuristics

When is a receiver likely to take the central route and when the peripheral route? According to the two authors, route selection depends on two factors: ability and motivation. Ability refers to the physical availability of the receiver to follow the message without distraction, motivation to the readiness and interest of the receiver to process the message. The central route is taken when the receiver is able and highly motivated to deal with the issue. The peripheral route is taken when the issue is less relevant for the receiver and/or the communication context is inadequate to get the message across. In this case, the receiver is less inclined to deal with each argument, but forms an opinion or even an attitude on the basis of simple cues and heuristics. Such cues may be related only to the circumstances of the communication, such as physical attractiveness of the communicator, overall credibility of the source, or perception of a consensual or majority opinion. They may also refer to specific clues or keywords in the message, such as "pollution" or "dump", or to formal criteria, such as the length of the message, the number of arguments, or the number and prestige of people mentioned in the message.

Within each route, the mental process of forming an attitude follows a different procedure. The central route is characterized by a systematic procedure of selecting arguments, evaluating their content, balancing the pros and cons, and forming an attitude. The peripheral route, however, bypasses the systematic approach and assigns credibility to a message by referring to the presence of cues. To be an effective risk communicator, the model would suggest that you test first your audience whether the issue is central or peripheral to them and then develop your message either as systematic and rational essay or as an appealing text with lots of positive clues.

Unfortunately the communication process is more complex than the model suggests. First, the audience of a communicator may be mixed and consist of persons with central and peripheral interests in the subject. Many cues that are deliberately used to stir peripheral interest can be offensive for people with a central interest in the subject (e.g. using advertising methods for risk communication). Second, most people are not predisposed to exercise a central or peripheral interest in a subject. Rather it may depend on the message itself whether it can trigger central interest or not. Third, and most important, the two routes are prototypes of attitude formation and change, and therefore only analytically separable. In reality, the two routes are intertwined: Persons may tend to respond primarily to the cues or primarily to the arguments presented, but they will not exclusively pursue one route or the other (Eagly and Chaiken 1984; or Eagle et al. 1981)

4. Sociological factors of trust and credibility

4.1 Trust in sociological perspective

The discussion of trust, confidence, and credibility focussed so far on the subjective processing of information and the assignment of credibility to a message or a source. The studies on persuasion revealed a complex network of factors that influence the formation of attitudes. Credibility of an institution and trust in the message were both relevant aspects in shaping people's readiness to accept information and to believe its content.

In this chapter, we will adopt a broader perspective and try to analyze what role credibility and trust are playing in the context of social structures and processes. Beyond the individual judgment of assigning trustworthiness to a source of information, confidence in the institutional management of social tasks and trust in the communication between subsystems of society constitute aggregate conditions that determine the overall climate of trust in a society and are related to the perceived performance of institutions and their flexibility to cope with new demands.

Trust on a personal level is a subjective expectancy that a person will refrain from behavioral options that may harm the trusting person. In the first chapter we translated this general concept of trust into the communication context. Trust necessarily entails risk-taking, but in contrast to the scientific endeavor of predicting the probability of potential outcomes, trust implies that the selection of options is left to the entrusted person or institution. Due to the perceived competency and honesty of the entrusted entity, one does not need to bother with assessing the outcomes of actions and with controlling the decision making process of that entity (Luhmann 1980; Luhmann 1973). This saves time and effort.

On a more aggregate level, trust denotes a generalized medium of social differentiation and division of labor (Parsons 1960). The performance of specialized institutions in economy and government relies on a prior investment of trust by those who are served by this institution or finance its functioning. Total control would imply that the control agencies would need the same expertise and the same time allocation as the performing institution. Such an arrangement would neutralize the desired effect of social differentiation and ultimately lead to a society of intimate clans performing all necessary social, economic, and political functions simultaneously. Such an intimate framework based on familiarity with each individual in the clan may be able to operate within a closed egalitarian community (cf. the group-grid distinction in anthropology; Thompson 1983), but a modern, functionally divided society could not function without trust as general medium of social communication.

Trust as a generalized medium is characterized by a diffuse and unspecified relationship between the involved actors (Parsons 1960; Parsons and Shils 1951). Similar to another generalized medium, such as money or prestige, its existence and functioning is independent from individual consent, but it can inflate or deflate as a result of the commonly expressed "trust in trust" (Luhmann 1973). The relative value of trust varies over time as empirical surveys clearly indicate (Lipset and Schneider 1983). In some periods, people tend to invest a large amount of trust in institutions and it takes many disap-

pointments before they withdraw this investment; in other periods, people tend to be extremely cautious with the investment of trust, but put more emphasis on functional equivalents, such as more organized control or increase of participation. Trust can partially substituted by other generalized media, but not totally replaced.

As we focus on trust in communication, we are only interested in which ways the general climate of trust and the structural performance of institutions set the stage for confidence in communication source and their credibility. The assignment of credibility is obviously related to the perception of the past performance of the communicator. This record does not only include the experiences of the audience with earlier communication efforts, but also their evaluation of the institutional task performance. If an institution does not meet the demands of the public, they are likely to face a credibility crisis even if they are absolutely honest about their failures. Specifically, risk communication is only regarded as trustworthy if the communicator is able to convey the message that s/he has met the public expectations in managing risks. Risk management and risk communication are closely linked and a bad management record cannot be compensated by an excellent communication effort. Communication may help to change public expectations or to correct misperceptions of the actual record, but it will not cover the gaps between expectations and perceived performance.

4.2 Trust and institutional performance

In analogy to the description of research results in psychological experiments, this subchapter comprises some of the interesting findings of sociological and organizational research with respect to trust and credibility of institutions. In contrast to the laboratory experiments in psychology, these findings are derived from surveys and other statistical data. On one hand, they are more applicable to "real" world situations, on the other hand they are usually verbal reflections of respondents in surveys and may be influenced by other factors than the proposed verbal stimulus. In addition, survey results leave more room for subjective interpretation of data compared to laboratory results. Caution is also advised in translating these results from the arena in which they were observed to the arena of risk management.

Again we will focus on the results of various studies and omit the description of the methodology and their specific design. For a more detailed review, we suggest to consult the respective literature (e.g. Lipset and Schneider 1983; Rourke et al. 1976; Katz et al. 1975):

- a) Researchers found a low correlation between the perception of institutional competence and the desirability of the tasks and goals that the institutions were performing. The institutions people like most received low ratings on competence and vice versa. Although sympathy helps to attain credibility, perceived competence alone may be sufficient for gaining trust, but the lack of sympathy makes people more critical towards the actual performance of the institution. Mistakes are more likely to be forgiven if the communicator can count on a sympathetic audience (Lipset and Schneider 1983).
- b) Perceived competence of institutions were most likely associated with the perception of a successful task performance and the perceived cost-benefit ratio in meeting

these tasks. In addition, the public image and the social prestige assigned to an institution serve as preliminary heuristic strategies to assign credibility (Matejko 1988).

- c) Perceived fairness and openness, the second prerequisite for institutional credibility, is closely linked to the transparency of the decision making process, the opportunities for public scrutiny and institutional control (check and balances), and the degree of personal satisfaction with the rationale and procedures for decision making in the respective institution. Surprisingly, the amount of actual opportunities for public involvement and participation was hardly correlated to perceived openness (Lipset and Schneider 1983; cf. theoretical concept Luhmann 1980).
- d) Institutional case studies demonstrated that the erosion of credibility was often linked to: incompetence, poor performance, incomplete or dishonest information, withholding of information, obscure and hidden decision making processes, denial of obvious problems, and denial of vested interests (Midden 1988; Matejko 1988; Lipset and Schneider 1983; Bergesen and Warr 1979) .
- e) Credibility can be enforced by: good performance, fast responses to public requests, consonance with highly esteemed social values, availability for communication with outsiders, unequivocal and highly focussed information transfer, flexibility to respond to crisis situations or new public demands, and demonstration of public control over performance and money allocation (Lipset and Schneider 1983; Rourke et al. 1976; Pinsdorf 1987) .

Success stories of communication efforts in the pharmaceutical and chemical industry demonstrate clearly that overreacting to public requests never hurts (Pinsdorf 1987). Taking off a product from the market even if only a tiny fraction of the product is contaminated or poisoned has helped companies in the past to manage a credibility crisis and regain public confidence. Private institutions were more often able to show such flexibility and immediacy in their response compared to governmental institutions. But the involvement of tax money in public institutions adds a potential risk factor in the trust building effort. If too much money is spent for communication, the intended effect may be counteracted by the outrage over the spending of public money.

The major lesson to learn from these studies is that most people invest initially in trust to institutions, but keep a close eye on their performance to assure that their investment earns return in terms of actual performance. The less these institutions are liked, the more they rely on a good record of past performance and flexibility to respond to public demands and claims. The general climate towards institutions in general and the socio-economic conditions are additional external factors that make people more inclined to invest in trust, but the most relevant factors are competence and openness.

4.3 A model of issue organization in risk debates

The results of organizational studies on credibility emphasize the close relationship between perceived performance and credibility. Many risk management institutions face the problem, however, that their specific task is not well understood and that public expectations do not match the mandate or the scope of management options of the in-

stitution. Risk communication in this situation has to address public expectations and public knowledge about the risk management rationale first before it can deal with actual management results and before it can ask for trust in the management effort. Such an educating approach is only acceptable to most people if the education process is mutual and if the essence of public concerns is adequately addressed.

The first criterion that risk managers have to learn from the public as much as the public can learn from them has become almost a truism in communication theory, but is still missing in the communication praxis (Covello et al. 1986; Zimmermann 1987; Renn 1988). Two-way communication is clearly a prerequisite of successful information campaigns, but it is often hard to implement and requires flexibility and the willingness to adapt to public concerns on the side of the communicating institution.

The second criterion of matching communication with public concerns is more complex and requires additional theoretical elaboration. Although two-way communication helps to identify these concerns, it is helpful to know what kind of concerns are usually expressed in the risk arena and in which way these different classes of concerns can be addressed. To classify these different classes of concerns, S. Rayner and R. Cantor have proposed a division into three levels of risk debates based on previous work of Ravetz on different knowledge classes (Rayner and Cantor 1987). The risk debate involves a factual level about probabilities and extent of potential damage, a clinical mode about institutional arrangements and experience to deal with these risks, and a world view perspective that is focussed on values and lifestyles in dealing with risks in general. The system uncertainty and the decision stakes increase with the order of the three levels.

We have modified this model slightly and substituted decision stakes with "intensity of conflict" and system uncertainty with "degree of complexity". We felt that even on the lowest level of factual evidence the decision stakes might be considerable, but the conflict level is lower due to the consensus on methodological rules of scientific inquiry. System uncertainty is also related to all three levels: depending on the society, world views may encompass hardly any uncertainty while probabilistic reasoning in science explicitly address the uncertainties involved. Again we felt that degree of complexity was a more adequate term. Even simple world views are more complex than personal or institutional judgments or factual evidence.

If the risk debate is mainly focused on technical issues, trust can be obtained by referring to data and scientific findings. Communication in this debate serves the purpose of convincing the audience that the factual knowledge compiled by independent scientists support the case of the communicator. Although scientists and many risk management agencies are most comfortable with technical debates, they are rare in real conflicts. More probable is that the focus of the debate is on vested interests, distribution of risks and benefits, and the adequacy of the proposed solution in terms of economic and social compatibility.

This type of debate does not rely on technical expertise, but on personal and institutional judgments and experience (second level). A debate on this level requires input from stakeholder groups and affected populations. The issue of conflict is not so much the magnitude of the risk, but the distribution of risk and the tolerability of such a risk vis-a-vis the potential benefits that the risk source is able to provide. Trust in this situ-

ation cannot be accumulated by demonstrating technical skills and expertise, but by compiling evidence that the communicator has been cost-effective in the allocation of resources and has been open to public demands and requests. Competent management and openness towards social demands are the two major factors in providing credibility to an institution in the context of a risk debate on the second level.

If the participants in a risk debate focus on values and future directions of societal development (third level), neither technical expertise, nor institutional competence and openness are sufficient conditions for conveying trust. Trust in this situation can only be a result of a more fundamental consensus on the issues that underlie the risk debate. The referendum on nuclear energy in Sweden can be used as an example to illustrate that point. The nuclear debate was as heated in Sweden as it was anywhere else in Europe. But through the referendum a consensus was accomplished. This consensus specified the limits for the growth of nuclear power, but also defined the legitimate range of nuclear power utilization in Sweden. This prior agreement helped to move the issue from the third to the second level where technical and organizational solutions could be discussed without expanding the debate into a fundamental conflict over lifestyles and basic values.

Most research on the effectiveness of building trust and confidence on the institutional level pertains to the second and first level of the risk debate (von Winterfeldt and Edwards 1984). The third level involves a macro-sociological framework that is hard to test empirically and that exhibits a degree of uniqueness of each single debate that it is difficult to draw generalizable conclusions. One of the common lessons learned from the study of the different risk debates is that technical and organizational solutions to a risk conflict can only be implemented if the debate never reached the third level or could successfully be removed from the third to the second level, at least for the majority of the interested audience. As long as value issues remain unresolved, even the best expertise and the most profound competence cannot overcome the distrust that people will have in the task performance of the acting institution.

4.4 The influence of the institutional and social context

The social context in which risk communication takes place is an important factor for gaining credibility. Although the primary variables are related to the performance of the institution and its perception in the public, the overall climate towards institutions in general has a definite impact on the trust that people have in specific institutions. Research in the last two decades has produced some of the factors that influence the social climate of trust:

- a) Confidence in business and economic organizations depends on the perceived quality of their services, but also on the employment situation, the perception of power monopolies in business, the observation of allegedly unethical behavior, and the confidence in other institutions, such as government or press (inverse relationship; cf. Lipset and Schneider 1983)).
- b) Confidence in political institutions depends on their performance record and openness, but in addition on the perception of a political crisis, the belief that government is treating everyone fair and equally, the belief in the functioning of

checks and balances, the perception of hidden agendas, and the confidence in other institutions, such as business or press (inverse relationship; cf Rourke et al. 1976)

- c) The more educated people are, the more they express confidence in the system, but they more they are also disappointed about the performance of the people representing the system. Less educated people express more confidence in leadership, but show less trust with respect to the system or institutions in general (Lipset and Schneider 1983).

Political conservatism correlates positively with confidence in business and private enterprise, and negatively with confidence in government and public service (this may be US -specific). Liberal positions are correlated with lack of confidence in both, business and government (Lipset and Schneider 1983).

In summary, social climate prestructures the conditions under which an institution has to operate for gaining or sustaining trust. In a positive social climate people tend to invest more trust in institutions from the beginning and may be more forgiving if part of this trust is abused. In a negative social climate people tend to be very cautious in investing trust in any institution and request to have more control over the performance of the affected institution. If trust is misused, it takes much time and effort to encourage people to start investing in the trustworthiness of the institution.

The social climate for trust seems to be a function of widely publicized events of mis-performance or trust abuse, the perception of an economic recession, the general level of public education, and the degree of controversy over public issues. For the U.S. political culture, distrust in large institutions is the rule, rather than the exception (Rourke et al. 1976; Katz et al. 1975; Lipset and Schneider 1983). The more people feel that institutions are controlled by countervailing forces and the more these institutions are atomized and fragmented, the more they find them trustworthy (Lipset and Schneider 1983). But as will be shown in the next chapter, the social climate for trust in institutions has been steadily declining over the last two decades in the United States.

5. Revealed trends of public confidence in U.S. institutions

5.1 Institutional credibility

The influence of macro-sociological and economic factors on the societal level of trust, confidence, and credibility can be illustrated by survey results in the United States. In general, public confidence in all major institutions, including business, government, and labor, has declined in recent years (Lipset and Schneider 1983). The basic institutional structures of society are still supported, but may be threatened if trust continues to decline (Betz and O'Connell 1983). These trends seem to be universal for the western world, including Japan.

The statistical data on institutional confidence exhibit two interesting features: First, the decline in trust is universal for all selected institutions and second, common interest institutions, such as churches, medical institutions, and colleges, top the list of trustworthy institutions while large political institutions and big business are at the end of the scale (Lipset and Schneider 1983). Similar results were found in a survey by Renn (1984) for a West-German sample about credibility of sources in the nuclear debate.

Scientific and other competent institutions received high ratings compared to more general political institutions and private business. The special distinction between small business (being more trustworthy) versus big business (being less trustworthy) in the U.S.-survey seems to be typical for the United States, since international surveys could not reveal similar attitudes of "smaller is more trustworthy" in the United Kingdom, West Germany, Australia, and Japan (Louis Harris 1981 in Lipset and Schneider 1983).

Survey results over longer time periods demonstrate significant variations in the average assignment of confidence in institutions. In the 1930ies, surveys revealed a low confidence in institutions. After the war institutional confidence improved steadily to reach a peak in the Mid-1960ies. During the next two decades, the confidence level dropped dramatically, but oscillated around significant events (Lipset and Schneider 1983). The Vietnam war, the awareness of the ecological crisis, and the tremendous political turmoil in the late 1960ies probably caused the significant drop in public confidence in the early 1970ies. The Watergate scandal obviously improved the level of public confidence in institutions because the political institutions in the United States were able to handle and overcome a serious political crisis (very positive results for the congress and the media at that time). The following economic recession, however, started a new malaise which was shortly interrupted by a more optimistic attitude at the beginning of the Carter administration. But this administration apparently failed to meet public expectations and so the public confidence index dropped again. Although the beginning of the Reagan era revitalized economic prosperity and optimism, the confidence in institutions did hardly change as more recent survey data suggest (University of Maryland 1984).

Most sociologists believe that the decline of confidence in public institutions is partially a function of better education and the increase of public aspirations with respect to their share of public resources and welfare (Lipset and Schneider 1983; Katz et al. 1975). In addition, the complexity of social issues and the pluralization of values and lifestyles may have contributed to a growing dissatisfaction with the actual performance of institutions (Renn 1986). But at the same time, people are confident in the governmental and economic system and do not support fundamental changes in the organizational structure of society. Therefore, the confidence crisis is less a systems than a performance or competence crisis.

This is being reflected by Lipset and Schneider: "We suggest that the increase in political dissatisfaction was not a cognitive or ideological change; it was rather a response to events, and to the perception of events, primarily in the political sphere. The vast majority of the population was not unhappy because government policy did not correspond to their ideological predispositions. They were unhappy because political leadership was proving ineffective in dealing with massive social and political problems, like war, race relations, and the economy." (1983, p. 399).

The less the public showed confidence in one class of institutions, the more they were inclined to assign more trust to those institutions that were either functional equivalents or control institutions for this specific institution (Lipset and Schneider 1983). The more people distrusted the government, the more they trusted private business and vice versa. Although trust is definitely not a zero sum game, people feel more comfortable to invest a fixed minimal amount of overall trust to different institutions and distribute this

amount according to their preferences. This mutual compensation scheme can also serve as evidence for the strong commitment of the American public to the idea of check and balances.

Public confidence in institutions was more negative if the institutions were listed in general terms. The general label "public utilities" triggered more negative responses than more concrete options, such as "Your local public utility company", or any utility company's name (Lipset and Schneider 1983). This result may be an artifact since many respondents might have no recollection of negative events with respect to their local company, but plenty of memories on public utilities in general (Availability effect). But this result could also be an indication that most people are actually satisfied with the personal service they receive from these organizations, but that they get a picture of the outside world through the media and personal networks that suggest more negative experiences and abuses of trust for people outside of the community. If this interpretation is valid, the affected institutions may all perform perfectly, but still face a credibility crisis due to the perception that the more abstract notion of an institutional type or class to which the specific institutions belong is associated with a negative image. The change of such an image may require a time consuming effort to demonstrate positive performance and to link the specific accomplishments of one organization to the pool of organizations which it is associated with.

5.2. Credibility in science and technology

Risk management can be associated with economic or political institutions and is therefore subject to the same social forces of growing distrust that other institutions face in the contemporary U.S. society. Since distrust is not directed towards the structure or the system of the institutions, but rather to their performance and leadership, some authors have proposed that the crisis is caused by a deep distrust of the American public toward professionals and cultural elites (Betz and O'Connell 1983).

Risk communication may face this resentment in particular because risk analysis and risk management rely on highly professionalized rules and run often counter to common sense. Peripherally interested persons are probably more susceptible to such an resentment because it offers a readily available cue to dismiss the information offered by risk management institutions. But even an elaborate processing of each argument presented may activate an unfavorable response if the language and the reasoning appear too technical and remote from everyday-life experiences.

But in spite of this opposition to professionalism, people's trust in science and technology is higher than in most other professional institutions. While opinion polls show a decline of confidence in Congress from 42 to 13 percent; in colleges, from 61 to 36 per cent; and in medicine from 72 to 43 percent, science suffered only a loss of nine percent (from 46 to 37) during the decade from 1966 to 1976 (Betz and O'Connell 1983). More recent data, compiled by the Academy of Sciences, indicate that professional institutions in general lost credibility over the last decade, but that the scientific community remained almost stable in spite some dramatic fluctuations from one year to the next (cf. Table 2)

But this overall impression of a favorable and rather stable credibility of scientific institutions has to be further qualified. "The attitudes of the general public toward science and technology are overwhelmingly favorable. At the same time, science did suffer from the general disillusionment experienced by all major social institutions during the late 1960ies and early 1970ies. Furthermore the minority voicing negative opinions of science and technology, though still small, does seem to have grown during the last 20 years. Coupled with this is the evidence that persons of the typically supportive middle class also are disproportionately more aware and concerned about such technological hazards, as pollution and nuclear arms. We might conclude that the seeds of disenchantment with science and technology are present, and in recent years perhaps a few have even sprouted" (Pion and Lipsey 1981, p. 313).

The reasons for a more skeptical or at least ambiguous perception of science and technology are rooted in at least three different developments (Renn 1984): First, after two decades of astonishing successes in scientific accomplishments, aspirations in the future applications of science exploded and led to expectations that problems such as cancer or world hunger could be resolved by science within a short time period. As these expectations remained unfulfilled, people became more skeptical and disencha nted. Second, the rise of the environmental movement and the awareness of the environmental crisis acted as reinforcers to the disappointment over the slow scientific progress and revealed the ambiguity of technical development. Third, the shift from qua ntitative to qualitative goals, a typical development in most western nations, induced a fuzzier perception of the merits and objectives of scientific and technological activities. The definition of what constitutes a good quality of life entailed a variety of often conflicting interests and goals that were often in opposition to the implicit values and interests of the scientific and technological community.

In addition to these more fundamental factors, other influences and developments have been suggested as caused for the increased skepticism toward science: the alignment of science to big business and government, anxiety about the ethical implications of further technological advances in some areas of medicine and the biological sciences, and the growing awareness that much scientific research lacks social relevance (La Porte and Metlay 1975). Lack of confidence in science is more pronounced among those who are young and who identify themselves as "liberal" and "conservationist" (Lipset and Schneider 1983; La Porte and Metlay 1975).

The decline of confidence in science and technology has major impacts on risk communication. Even within technical debates that require expertise as a means to provide trust, people have no means to study or review the evidence presented. They do not possess a lab and cannot afford to employ a scientist to investigate the various claims. Even scientific reputation or evidence of peer review may not be sufficient to convince the audience that an information is technically correct, let alone that it is relevant for the issue in question. One of the solution in this dilemma is either to lift the debate on the second or third level, where common sense and prior experience provides enough knowledge to take part in the debate, or to initiate a sophisticated institutional framework of check and balances that assures scientific scrutiny and control.

In spite of this difficulty, risk communication should emphasize the scientific roots of risk analysis and risk management and refer to scientific conventions as a means to reconcile conflicts about facts. Among the professional standards that guide risk management efforts, scientific standards are more likely to be accepted by a lay audience than for example institutional rules. If these standards can be expressed in common sense concepts and applied to everyday experience (not just a translation into everyday language), the probability of trust in the message will further increase.

6. Lessons for risk communication

What advice can we give to risk communicators of how to design and implement a risk communication program that incorporates the findings of past research and includes the more anecdotal evidence of risk communication efforts in the past. The first lesson is to distinguish between the three levels of the debate. Nothing is more detrimental and frustrating for all participants involved than addressing an audience who expects a third level debate and is confronted with a detailed technical analysis of the issue. The risk communicator should investigate the level of debate beforehand and design different communication programs for each level.

Debates change frequently in nature and it is good to have the means available to switch from a technical, to an institutional, and to a moral debate. While technical expertise is vital on the first level, and evidence for institutional competence and openness on the second, there is no clear medium of communication available for the third level. A more general discourse focused on value issues may be the appropriate tool. Is the objective of such a debate to reconcile existing conflicts, the involvement of an outside mediator may be helpful to set the agenda and to identify the concerns and values that the communicator is supposed to address.

Using our analytical model of distinguishing between message, person, institution, and social climate, we developed a set of conditions and prerequisites for gaining trust in communicating with others (cf. also Table 1). These refer to general principles of risk communication and provide orientations for analyzing and designing communication programs.

- a) To improve the *trust in a message* we recommend to explain the rationale of risk analysis and its role for risk management so that the audience is better prepared of what to expect. In addition, the decision making process and the past record of the institution should be included in the message so that people can assign competence to the actors and get a better feeling of the trade-offs that had to be made in meeting the specific risk management task. Evidence of competence, fairness towards other viewpoints, and references to commonly shared values

and beliefs will make a message more attractive and could help to address the centrally and peripherally interested audience at the same time. Conclusions should be made explicit and vested interests should not only admitted, but justified in terms of public mandate or economic function.

- b) To improve *trust in a personal communicator*, the major goal is to develop a communication climate that enables the audience to identify with the communicator

and share his or her experiences and beliefs. The more a communicator manages to avoid the mask of an institutional spokesperson and the more he or she can express compassion and empathy for the audience, the more likely the audience will identify with the speaker and feel compelled to the arguments. Conveying probabilistic information is a real challenge, but can be done in reference to everyday experience of budget constraints and consumer products. Furthermore, evidence of successful use of risk analyses in hazard management can serve as demonstration to define the role and limitations of risk analysis in improving public health and the environment. Peripheral cues should be confined to commonly shared symbols, appealing formats, and surprises in openness and honesty and should definitely avoid negative labelling of potential opponents, swiping generalizations, or typical advertising gimmicks. Peripheral cues are important for successful communication, but cues have to be selected carefully to please the peripherally and centrally interested audience.

- c) To improve the *credibility of an institution* the vital factor is performance, not public relations. Confidence has to be gained by meeting the institutional goals and objectives. In addition, credibility is linked to the evidence of being cost-effective and open to public demands. These two goals are often in conflict with each other (Kasperson 1987), but they have to be treated as complimentary, and not as substitutional goals. Fairness and flexibility are major elements of openness. In addition to assuring sufficient external control and supervision, public participation may be implemented as a means to demonstrate the compliance with the political mandate and to avoid the impression of hidden agendas. On the premises of good performance, communication programs can be designed that reflect these accomplishments. Such programs should provide honest, complete, and accurate information which is responsive to the needs and demands of the prospective audience. This can only be done if the source engages in an organized effort to collect feedback from the audience and establish a two-way communication process. Involvement of citizens, open house policies, discussion forums, open TV channels, or other means should be explored to assure the functioning of the two-way communication structure.
- d) To *improve the social climate* is not within the realm of possibilities for a single communicator. But large-scale organizations or association of organizations can affect the overall climate. One way to improve the climate is to accept and even endorse checks and balances in the control of the organization. The other obvious solution is to demonstrate the flexibility and foresight of the organization in meeting and anticipating new public claims and values. The impersonal nature of institutions may be mitigated by providing special local services and by engaging in community activities and programs. Governmental institutions will receive more credibility if they do not leave the impression of permanent crisis management, but of competence and preparedness for long-term threats and challenges (in particular pertaining to environment and technology).

Many different factors affect credibility. On the personal level, appearance, communication style, honesty, and creating an atmosphere of identification of the audience with the communicator are major variables that influence credibility; on the institutional

level the actual performance in terms of role fulfillment, cost-effectiveness and public expectations as well as communication style in terms of readiness to respond immediately to public concerns or openness to new claims and demands constitute confidence and help to build credibility. Furthermore, the social climate and the level of controversy associated with the issue affect the assignment of credibility independent of the performance of the actors involved.

7. Conclusions

The objective of this report has been to review the relevant psychological and sociological literature on trust and credibility in communication and apply the findings of our search to the new area of risk communication. What are the major insights that we gained from our review and how can they be practically applied to risk communication programs?

The most important conclusion is that psychological and sociological research cannot provide a laundry list with proper solutions for all kinds of communication problems. A communicator who expects recipes or fool-prove guidelines for dealing with the public will certainly not find them in the literature on persuasion or institutional credibility. The major finding of all the experiments and surveys conducted so far is that individuals as well as social units make use of a complex variety of internal and external cues to process messages and that the variation of one or two factors may only lead to marginal changes in the outcome. As hard as it is to make predictions from existing cues to attitude changes or from attitudes to actual behavioral responses (Wicker 1979), the more difficult it is to create an communicative environment that guarantees the desired persuasive effect.

With this reservation in mind, studies about persuasion and institutional credibility provide a considerable amount of interesting findings that are relevant for risk communication. First, credibility of a communication source is closely linked to the perceived past performance record and its openness for public demands. The more institutions comply with the expectations of the public, the more confidence people will have in these institutions and the more trust they will assign to their messages. Communication efforts may be successful to change excessive aspirations or to correct misperceptions of the actual performance record, but it is more than unlikely that communication can compensate poor performance.

Furthermore, in a climate of general distrust toward social organizations, it is helpful to accept countervailing powers and public control and to provide public access to all relevant information. The organization of open houses, the invitation of representatives of public groups to board meetings, the automatic and uncensored publication of relevant pollution data in newspapers or in public displays (i.e. air pollutants, radioactivity, or other substances), the involvement of the organizational staff in community projects, and the provision of opportunities for citizens to participate in control or emergency planning boards are some examples of structural measures that counteract the public suspicion of "hidden" agendas and dishonesty. They create a microclimate of trust and credibility amidst a macro-climate of skepticism and lack of confidence. Survey data already revealed that most people have more favorable views about the trustworthiness of their local institutions compared to the institutions in general.

On the basis of these structural opportunities for public involvement and control, specific communication programs can be designed that include elements of successful persuasion. Again these elements will not work if the message is untrue, biased, or incomplete. In contrast to advertising where people feel that nothing important is at stake, the risk issue is too sensitive for most audiences to be lured into accepting a message by the mere presence of peripheral attractors. To make messages attractive is an important factor for a successful risk communication, but if the message is weak or even false, the best package is not worth a dime.

How can one make a message attractive provided that the information given is accurate, complete, and honest? The major recommendation that comes from our analysis is to assess the concerns of the targeted audience before drafting the message. Are the concerns related to technical matters, such as emissions or potential health effects, or to institutional performance and judgments, such as the decision to ban a substance from the market and tolerate another, or to values and world views, such as the tolerability of large-scale technologies or the inequities involved in centralized production or waste disposal facilities? Depending on the level of concerns in the actual risk debate, the communication program has to be designed and implemented in a different way. Technical debates need the input from technical experts and scientists and rely on clear evidence that the risk assessment of the communicator reflects the best available estimate. Institutional debates need the input of senior management staff and outside control agencies who can give testimony about the past record of the institution and independent reviews of its performance. Value-driven debates are most difficult to handle and most institutions avoid to deal with them. But credibility is easily lost if third level concerns are ignored or -even worse- addressed with technical or legal arguments. It seems rather advisable to open a discourse with different stakeholder groups, social scientists, moral authorities, and public opinion leaders as a means to clarify one's own values and document their legitimation and validity in a value-pluralistic society.

Finally, the message and the personal appeal of the communicator can be improved by following some of the principles developed in Chapter 6. The major thrust of these guidelines refer to the inclusion of verbal clues and elements of personal appearance that make the audience identify with the message or a communicator and relate to their personal experience and shared values. Technical jargon (even in technically oriented debates), reference to professional wisdom (versus common sense), emphasis on common practice, and impersonal approach are some of the cues that communicators should avoid. The more the audience feels that the message means something to them or that the communicator is "one of them", the more they will be inclined to listen to the message and process its content.

The order in which these conclusions were presented reflect the order of importance and effectiveness. A good communication program should not start with communication at all, but with a critical review of the organizational structure and the potentials within this structure to meet the demand for openness and public involvement. Then a thorough analysis of the issues is needed to identify public concerns and characterize the risk debate. As late as then comes the design of the communication program with the formulation of the message, its proper packaging, channeling, sending, and testing in terms of communicative feedback. Even if all these recommendations are followed, the success

is never guaranteed. In an open society, messages compete with each other for public support. The better the quality of the message and its appeal, the better is its chance to reach the desired audience. To give every group in society a fair chance to express an opinion and to provide the platform for a rational discourse on the different views expressed is the ultimate goal of communication in a democratic society. Risk communication can certainly contribute to that goal.

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MESSAGE	
<i>Positive</i>	<i>Negative</i>
Timely Disclosure of Relevant Information ¹⁾	Stalled or Delayed Reporting ¹⁾
Regular Updating With Accurate Information ¹⁾	Inconsistent Updating ¹⁾
Clear and Concise	Full of Jargon ²⁾
Unbiased ³⁾	Biased ³⁾
Sensitive to Values, Fears and Concerns of Public ^{4), 5)}	Inconsiderate of Public Perception ³⁾
Admits Uncertainty ¹⁾	The Absolute Truth
From a Legitimate Reputable Source ^{3), 4)}	From a Questionable Source
Organized Message ⁵⁾	
Use of Metaphors ⁵⁾	Too Literal ⁵⁾
Explicit Conclusions ⁵⁾	Receiver Derive Own Conclusion ⁵⁾
Positive Information Recorded in Early Part of Message ⁵⁾	
Forceful and Intense ⁶⁾	Dull ⁶⁾

PERSON	
<i>Positive</i>	<i>Negative</i>
Admits Uncertainty ^{1), 3)}	Cockiness
Responds to Emotions of Public ³⁾	Indifference
Appears Competent ^{1), 6)}	
Similarity with Receiver ^{5), 6)}	Perceived as Outsider ³⁾
Has Some Personal Stake in the Issue ³⁾	
Clear and Concise ¹⁾	Too Technical ²⁾
Perceived as 'Expert' ^{5), 6)}	
Perceived as 'Attractive' ⁵⁾	
Charismatic ⁵⁾	
Trustworthy-Honest, Altruistic, and Objective ⁶⁾	

Table 1. Factors of credibility for different levels of Analysis

INSTITUTIONS			
<i>a) abstract</i>		<i>b) concrete</i>	
<i>Positive</i>	<i>Negative</i>	<i>Positive</i>	<i>Negative</i>
Healthy Economy Low Inflation, Unemployment ⁷⁾	Recession ⁷⁾	Positive Personal Experience ⁷⁾	Negative Personal
	High Inflation High Unemployment ⁷⁾	Strong, Competent Leadership ⁷⁾	Incompetence ⁷⁾
New Administration - New Ideas ⁷⁾	Corruption ⁷⁾	Positive P.R. ⁷⁾	Layoffs/Hiring Freeze Strikes ⁷⁾
	Domestic Violence or Unrest ⁷⁾	Sound Environmental Policy ⁷⁾	Irresponsible Environmental Policy
Period of Relative Tran- quility ⁷⁾		Produces Safe and Good/Services ⁷⁾	Poor Quality Goods/Services ⁷⁾
Perception of Competent Leadership ⁷⁾	Poor Leadership ⁷⁾	Positive Past Record of Performance ⁷⁾	Negative Past Record of Performance ⁷⁾
Perception of Altruistic Motivation ^{7),8),9)}	Image of Self-Serving Motivation ^{7),8),9)}	Reasonable Rates ⁸⁾	Exhorbitant Prices ⁸⁾
Peace ⁷⁾	War ⁷⁾	Undertakes Socially Rele- vant Tasks ⁹⁾	
		Practical Contributions to Every Day Life ¹⁰⁾	
		Benefits Outweigh Costs ¹¹⁾	Magnitude of Risk Tak- ing Greater than Benefits ¹¹⁾

POLITICAL/CULTURAL CONTEXT	
<i>Positive</i>	<i>Negative</i>
Faith in Institutional Structures ⁷⁾	Perception of Structural Decline ⁷⁾
Checks and Balance System Functioning Well ⁷⁾	Poor Leadership/Incompetence ⁷⁾
	Corruption/Scandal ⁷⁾
	Energy Crisis
	Perception of Unfair Taxation
New and Innovative Ideas ⁷⁾	
	Perception of Worsening Financial Situation ⁷⁾
	Social Unrest ⁷⁾
	Terrorism ⁷⁾

Table 1: Factors of credibility for different levels of Analysis (continued)

Institution	1973	1974	1975	1976	1977	1978	1980	1982	1983	1984	1986
	-----Percent-----										
Medicine	54	60	50	54	51	46	52	46	51	50	46
Scientific community	37	45	38	43	41	36	41	38	41	44	39
Education	37	49	31	37	41	28	30	33	29	28	28
Organized religion	35	44	24	30	40	31	35	32	28	31	25
Military	32	40	35	39	36	29	28	31	29	36	31
Major companies	29	31	19	22	27	22	27	23	24	30	24
Press	23	26	24	28	25	20	22	18	13	17	18
TV	19	23	18	19	17	14	16	14	12	14	15
Organized labor	15	18	10	12	15	11	15	12	8	8	8
Executive branch of the federal government	29	14	13	13	28	12	12	19	13	18	21
Congress	23	17	13	14	19	13	9	13	10	12	16
U.S. Supreme Court	31	33	31	35	35	28	25	30	28	33	30
Banks and financial institutions	NA	NA	32	39	42	33	32	25	24	31	21
N =	1,504	1,484	1,490	1,499	1,530	1,532	1,468	1,506	1,599	989	1,470

SOURCES James A. Davis, Tom W. Smith, General Social Surveys Cumulative Codebook, 1972-1985, Roper Center, pp. 166-169; unpublished 1986 data provided by Tom W. Smith

Table 2: Public indicating "a great deal of confidence" in the people running selected institutions: 1973-86