JAN M. GUTTELING

Current views on risk communication and their implications for crisis and reputation management

Keywords: Risk communication, Crisis communication, Reputation management

Organizations prepare for crisis communication by designing, implementing, and evaluating procedures, scenarios, and emergency measures. In addition to crisis communication, risk communication is a concern for many organizations as well. Risk communication is viewed as an interactive, multi-actor democratic process. Traditionally, risk communication is seen as a linear, top-down, elitist, expert-to-public approach. In this paper, the relation between crisis communication and risk communication is described. In addition, a model is presented based on the notion that crisis communication should be proactive, and focusing on the management of the relation between the organization and its relevant stakeholders or the organization's reputation. The new thinking on the risk communication process is essential for an organization's crisis and reputation management.

Introduction

Organizations prepare for crises by designing, implementing, and evaluating procedures, scenarios, and emergency measures. Usually, this includes working on the content, structure, and style of particular documents. This preparatory process is part of the crisis control or crisis manage-

ment. In the process of crisis management the communication function is an important determinant of its success or failure. Traditionally, the quality of the crisis communication plan is seen as the most important determinant of the success of the crisis communication. However, on reviewing several crisis communication cases, Marra (1998) advocates that organizations become less dependent on crisis communication plans. He argues that most plans have the unlikely premise that every crisis will manifest itself in a way similar to a previous crisis. This also implies that crisis management strategies are built on these inadequate and rather inflexible scenarios. Marra describes several examples of good planning eventually turning into poor crisis communication. A well-known example is that of the American space agency NASA, which adopted a sophisticated crisis communication plan with a maximum response time of 20 minutes. In spite of this plan, it took NASA almost 6 hours to come with a public statement after the Challenger disaster in 1986. The American oil company Exxon had implemented an elaborate crisis communication plan when the Exxon Valdez oil spill occurred. It took Exxon no less than 6 days to formulate a public statement on the situation.

In addition to crisis communication, risk communication is a concern for many organizations as well. Risk communication focuses on the flow of information between various actors on the probability of the occurrence of negative consequences of activities, events, or processes. These consequences include the whole spectrum of threats to indi-

vidual or societal safety, health, and well-being. Because of the complexity and vulnerability of the modern technical and social systems, Beck (1986) characterized modern society as a risk society. To be able to cope with modern life adequately, the public is very dependent on complex modes of information transfer, which must be timely, correct, and complete. This communication process is global in nature.

Although the theoretical and empirical basis of risk communication is rather thin, more and more studies and best practices are being documented (Gutteling & Wiegman, 1996). The domain of risk communication has existed now for approximately 20 years, and we are already able to distinguish between traditional approaches and more recent ideas. In the 1980s, risk management was primarily the domain of government officials and experts working for private enterprises. However, as the systems involving risks became more complex and opposition to risks grew, the decision-making on the acceptance of risk became a problem in the western world. In this situation, the public expected governments and experts to communicate on risk issues (Otway, 1987). At present, there is a continuous flow of information on risks between experts and the public. Government at many levels as well as private companies are designing and implementing various strategies to start and maintain a risk dialogue with their stakeholders.

In this paper, I will describe the relation between crisis communication and risk communication. First, I will highlight some important developments in the area of risk communication with consequences for crisis communication. I will illustrate these developments with research examples on the Y2K issue and on modern biotechnology. Second, I will present a model reflecting the notion that crisis communication should be proactive and focusing on the management of the relation between the organization and its relevant stakeholders or the organization's reputation.

The traditional approach to risk communication

Based on research findings indicating that differences exist in risk perception between experts and the lay public, many experts have argued that the public's risk perception can be best characterized as ignorant/irrational, selfish, or prudent (Freudenburg & Pastor, 1992). Evidently, this assessment of the public's risk perception would also guide the traditional risk communication strategy of government agencies, private companies, and scientific experts. Basically, this strategy is: Providing rational, "objective" information to increase the level of knowledge of the public will change their "irrational and subjective" opinions (Liu & Smith, 1990, p. 332). From this perspective, the ideal risk communication is a linear, one-way, expert-to-lay-public process in which experts persuade laypeople to accept risks. The risk communication typically contains technical, quantitative, or statistical information making the point that the risks are at an acceptable low level. The information presented to the public is inherently complex and seems to focus primarily on casting light on the dark side of technological developments, or to put the risk numbers into context (see Freudenburg & Rursch, 1994). Rowan (1994) described this perspective on risk communication as the 'technical view' as opposed to the 'democratic view'.

Comments to the traditional 'technical' approach

The question is whether the transfer of complicated risk information is sufficiently tailored to the informational needs and wishes of the public. First, it is conceivable that the public has problems processing complex risk information. Will the public be able to understand technical or statistical knowledge? Quite a few studies have indicated problems in this respect (see Gutteling & Wiegman (1996) for a review of these studies). Further, a rationalistic style may aggravate the public's doubts about the real risk magnitudes, by accentuating small probabilities but neglecting the potentially severe consequences. Of course, it is not neces-

sarily true that providing understandable and credible risk information will make people accept the conclusions and recommendations of risk assessors, as the implicit technical view seems to take for granted.

The technical perspective is similar to what Cvetkovich et al. (1989) have named the Factual Information Model. According to this model, presenting information will reduce the discrepancy between actual and subjectively perceived risk. However, in a critical review Cvetkovich et al. (1989) have indicated that the information model fails to be an adequate type of risk communication model due to at least three faulty assumptions. These are discussed here in some detail.

The consequences of a rationalistic communication strategy

The first faulty assumption in this model is that the public uses the same style of analytic thought to elaborate on risk messages as expert risk-communication sources do. This is not very likely. Johnson and Petcovic (1986) observed that 60% of risk analysts would communicate about risks in a logical, rational, and analytical style. Therefore, according to these authors, risk analysts would miss three-quarters of the public because they are on another wavelength. Less than 20% of the risk analysts would use a style more suited to the needs of the public.

When communicators persist in applying a rationalistic communication strategy, the public's doubts about the true nature and magnitude of the risk may increase rather than decrease (Gutteling & Wiegman, 1996). The literature is abundant with examples of top-down communication in which public trust in sources of risk communication such as, for example, government agencies, private companies, and perhaps even scientists, decreased (see, for example, Peters et al., 1997). In general, the public perceives these sources as not very credible (Covello et al., 1987). Fessenden-Raden et al. (1987, p. 96) noted that when people suspect or dislike government agencies, they will regard risk information provided by their officials as less 'true' than

what people hear from other sources. This lack of trust can have many causes and is probably deeply rooted in the public's previous experiences with these sources or their organizations. One may feel that government is not very competent in the risk area, that the interests of certain private sector organizations influence governmental decision-making too much, or that government, for political or strategic reasons, is very much inclined to implement specific technologies without the public's consent. On the other hand, the public may perceive a private company as a competent source regarding their specific technology and the risks involved, but nevertheless do not trust their risk communication efforts (see, for example, McCallum et al., 1991). The public may argue that in most private companies economic interests preponderate, and therefore they may suspect that the company's communication activities are aimed at improving its economic goals, for instance by trying to silence the opposition. Increasing economic costs by designing additional safety measures, providing complete and unbiased risk information to the public, or allowing the public to participate in the decision-making about their (hazardous) activities, may seem counterproductive to the company's economic goals. On these grounds, it is not hard to understand why the public sometimes has little faith in the initiatives of government agencies or private companies to communicate about risks.

Rivaling rationalities in the perception of risk

The second faulty assumption of the technical perspective on risk communication is that the audience perceives reality in a similar fashion as the (expert) communicator. However, perceptions of a hazardous reality can be quite different between risk experts and laypersons (see, for example, Slovic, 2000). In the early 1980s Fischhoff et al. (1981a; 1981b) reported the first observations of discrepancies in experts' versus laypeople's perception of risks. Subsequently, others also addressed and analyzed this issue (e.g., Otway, 1987; Kraus et al., 1992; Wiegman et al., 1995). The main purpose

of these studies was to increase the understanding of public perceptions of so-called 'low-probability, high-consequence' risks in various technological domains (nuclear energy, chemical industries, etc.). An important outcome of these studies was that 'subjective' determinants are best to describe lay perceptions of risk. In short, laypeople will worry most about risks when the perceived level of threat is high, the risk is unfamiliar, people cannot control the risk themselves, and are exposed to the risk involuntarily. Therefore, laypeople are probably most interested in the individual consequences of the risk (see, for example, Slovic, 2000). In contrast, experts' opinions are mainly based on 'objective,' statistical, actuarial data, which focus on societal, but not on individual consequences. Margolis (1996) refers to these two notions as the *rival rationalities view*. Douglas and Wildavsky (1982) indicated that the understanding of risk should also focus on social and cultural processes, which also determine people's perception of risks. The 'social amplification model' also underscores these aspects as well as the interaction with institutional processes (Kasperson et al., 1988). Slovic (2000) pointed out that many mechanisms might contribute to the social amplification of risks, such as media coverage, the agendas of various stakeholders (e.g., environmentalists), and the signal value of an incident for the assessment of the magnitude of a risk.

Considering these opposing views on experts and laypersons in the context of risk perception, we decided to design a study enabling us to assess several of the above subjective risk perception indicators with representatives of both groups (Gutteling & Kutttschreuter, in press). For several reasons, we assumed that the so-called Millennium bug would be an excellent case study to focus on the role of expertise in risk communication. The Millennium bug shared many characteristics with other so-called 'low-probability, high-consequence' technology-related risks. Computer experts confronted the public with the pessimistic idea that on 1 January 2000 the Millennium bug would cause the hardware and software of essential computer systems to behave in unreliable and unpredictable ways. Because computer tech-

nology has become an essential part of the industrialized world, this risk scenario was supposed to affect all sectors of society. The Millennium bug was first and foremost a serious economic issue, but many risk scenarios described potential, cumulative health and safety consequences. Without proper mitigation, the consequences of the Millennium bug were expected in the financial and business world, military and health care organizations, nuclear power plants, the chemical industry, the energy supply, the transport sector, in small and medium-sized businesses, and finally in people's homes. The results of this study indicated that several months before the bug was supposed to become active, several differences indeed existed between laypeople and experts in risk perception and risk behavior. Laypeople worried more, did see the issue as more personally risky, and did think the level of public awareness was higher than experts did. Compared to laypeople, computer experts felt more capable of taking mitigating actions, and they were more convinced that these actions were adequate. Although these differences were in the direction we had expected, in absolute terms they were rather marginal because the majority of the laypeople and the experts did not perceive the Millennium bug to be a major threat. We observed no differences between laypersons and computer experts with respect to the estimated probability of occurrence of the negative consequences of the Millennium bug, the assessed riskiness for society, and the assumed level of expert awareness of the problem. Additionally, laypersons and computer experts did not show different levels of intention to take risk-mitigating actions.

These results lead to the conclusion that the rival rationalities perspective was only partly supported with respect to this particular risk issue. Rather unexpected was our finding that laypersons and computer experts alike blamed computer people for the problem, and remarkably, laypeople expressed more trust in Millennium-proof claims for machines and organizations than computer experts did. Compared to experts, laypeople were more convinced that government agencies should do more to inform the public about the Millennium risk. This result seems to be in line

with the somewhat higher level of worry of laypeople. Perhaps this is an indication that laypeople were convinced that risk communication could diminish the level of worry for a risk like the Millennium bug. Not surprisingly, computer experts had a significantly more positive attitude toward the computer technology than the laypersons. However, the attitude of laypersons was also very positive, indicating that this domain of technology is not disputed.

Are risks always apolitical?

This last result fits with the third and final faulty assumption in the technical view of risk communication as observed by Cvetkovich et al. (1989). The factual information model wrongly assumes that risks are — by definition — apolitical. As Roger Kasperson (1986) has noted, the simple transfer of risk information often becomes a political issue about the more fundamental risk questions. This may be particularly the case when the technology causing the risks is disputed, which is not always the case, as we have just seen in the Millennium bug example. Elaborating on Kasperson's notion, risk communication on a politically controversial technology should focus on citizens' evaluations of the political process. Important factors here are the individual's values concerning procedural fairness, the way in which society reaches judgments and decisions, and distributive fairness, how fairly risks and benefits are distributed over different groups in society. These judgments of fairness are important in the democratic perspective on risk communication (see Rowan, 1994). Rules that guarantee a just and fair process, in which all parties have maximum participation and decision-making power, govern the democratic model. In the democratic view, persuasion is out of the question, particularly for governmental or industrial bodies, because the aim of communication should be mutual understanding and not the exertion of power. Sometimes people perceive it as manipulation when communication professionals use sophisticated persuasive techniques to influence people's risk attitudes in these fundamental issues, and this perception

will lead to resistance and will decrease the level of public trust or increase public outrage. Scholars have described the concern for the manipulative nature of risk communication as well. Heath and Nathan (1990–91) pointed out that "Sources of risk information not only try to control risk decisions but [the] availability and interpretation of risk information as well". Some even fear risk communication is always manipulative: "Risk communication is often a code [word] for brainwashing by experts or industry" (Jasanoff, 1989). Witte (1994) stated: "By virtue of framing messages in a certain manner, in a certain order, with a certain amount of information, communicators manipulate receivers into certain mind-sets — sometimes intentionally and sometimes unintentionally".

Toward a new perspective on risk communication

Thus, risk communication should not be seen as a top-down activity in which experts educate the public about risks but rather as an interactive process characterized by a multi-actor flow of information on risks and the meaning each actor attributes to the risks. This flow of information goes back and forth between such stakeholders as academic experts, policy makers, interest groups, private companies, and the public. Such an approach is the best approximation of the democratic perspective. The democratic and the technical views are based on different underlying views on public participation processes: democratic or elitist, respectively (Rowan, 1994). The democratic view is based on the claim that the public should be in the position to influence the risk decisions that affect their lives directly (Renn et al., 1995). The open dialogue is the basic assumption for the communication process. Only in such circumstances can public participation lead to a greater responsiveness and legitimacy of organizations and help reduce or resolve conflicts in the risk area (Fiorino, 1990). The elitist view highlights decision-making by the few bright persons who possess the relevant expertise and knowledge (Renn et al., 1995).

Public involvement in risk decision-making

The public's desire to participate in risk decision-making is not just a scholarly frame of mind. The results of a study we performed on modern biotechnology also support this notion (De Jong et al., 2000). This study, which focused on decision-making and information flows on this issue, pointed out that the public claims a place in this process. Figure 1 presents the public's views on both the observed and desired levels of influence by various stakeholders on biotechnology decision-making. Stakeholders are the public itself, the news media, nongovernmental organizations (consumer organizations, nature and environmental organizations, animal welfare organizations, and religious organizations), government, the private sector, and the scientific community.

As Figure 1 indicates, the respondents in this study would like to have a higher level of influence on decision-making for government, nongovernmental organizations, and the public itself. The present level of influence of nongovernmental stakeholders and the public is seen as rather small. Less than 30% of the respondents have the opinion that these stakeholders have much influence in the biotechnology debate. On the other hand, the public feels that in the present situation the scientific community and the private sector have a lot of influence. Of the respondents, 90% and 76% attributed much influence to these stakeholders, respectively. According to the public, however, the power base for these stakeholders should be reduced. So, while more than 90% of our respondents prefer government to have control, only 65% of them want science to have power, and only 26% is in favor for much private sector influence. The

Figure 1 Public perception of present and wanted influence in decision-making processes in modern biotechnology.

respondents of the study by De Jong et al. (2000) also wanted the influence of the news media reduced.

Information flows precede decision-making and participation by the public on risk issues. So we asked the same respondents to evaluate how good a job the organizations mentioned previously do in informing the public (Figure 2).

According to the respondents, the news media do the best here, which is probably not very surprising. Approximately 65% has the opinion that the news media carry sufficient information on the developments of modern biotechnology. Most remarkable is the low number of respondents who feel that government is providing enough information on these developments. According to our respondents, then, government falls short in this area, which may be seen as a problem because of the important role attributed to the government in the decision-making process. Even fewer people feel that the information provided by private companies is sufficient. Nongovernmental organizations and the scientific community could do better jobs in this respect as well.

Crisis and risk communication with respect to reputation management

All organizations have internal and external stakeholders, among them customers, investors, employees, the general public, governmental organizations, nongovernmental organizations, news media, etc. All stakeholders may have an influence on the organization's performance, particularly in the typical risk and crisis issues of health, safety, and well-being. For this reason more and more organizations want to communicate with their stakeholders on these issues. In many cases, the existence of risks may have negative consequences for the organization's reputation, credibility, and internal and external legitimacy. Reputation is the perception of the organization by its relevant stakeholders. It comprises an affective, emotional, or rational reaction toward the (name of the) organization in terms of strong or weak, good or bad, positive or negative (Fombrun, 1996). Reputation management and more in particular the organization's

Figure 2 Public's perception of the information transfer on modern biotechnology of various sources to the public.

communication will have to aim at securing these vital organizational aspects and to improve the external legitimacy of the organization. Organizations with a sound reputation have several advantages over other organizations. They usually have more control over their income and costs, are able to employ better qualified and more supportive personnel, they have more credit with their customers, and are less likely to suffer reputation damage in case of a sudden crisis (Fombrun, 1996). Stakeholders perceive organizations with a good reputation as good employers, excellent investments, producers of top-quality goods or services, and as behaving from a clear sense of social responsibility.

An integrated crisis and risk communication model

Several years ago Kreps (1986) described crisis management as “the use of public relations to minimize harm to the organization in emergency situations that could cause the organization irreparable damage”. Just a few years ago Francis

Marra (1998) published his crisis PR-model, which illustrates the interrelation of crisis communication and risk communication, and which focuses on the management of the reputation of the organization as the main objective of these types of communication. Figure 3 presents an adapted version of the model.

This model defines the outcome of a crisis communication process in terms of the relation between an organization and its relevant stakeholders before and after the crisis. If the previous relation between the organization and its stakeholders is good and therefore the reputation of the organization is positive, then the crisis will not jeopardize the strategic goals of the organization (Fombrun & Rindova, 2000). In case of a bad reputation with some or all of the organization’s stakeholders due to a bad relation, the organization has a problem in times of crisis. Other important factors are the communication culture in the organization and the level of autonomy granted by the organization to the communication department. In the original model, Marra

Figure 3 Adaptation of the Marra (1998) Crisis-PR Model.

did not specifically focus on the influence news media may have on the relation between an organization and its stakeholders. Because crisis and risk communication by definition are part of a societal context, in which the journalistic processes are important modes of information transfer, as we have seen in our study on modern biotechnology, we felt it necessary to adapt Marra's model in this respect.

Marra (1998) sees risk communication as an opportunity for organizations to actively work on their relation with relevant stakeholders. The developments in the chemical industry may be an illustration of this point of view. For many years, the chemical industry encountered risk and external legitimacy problems. Their response was the so-called Responsible Care Program, which originated in Canada in the early 1980s. After the Bhopal disaster involving the American company Union Carbide and the soil pollution scandal at Love Canal, the American chemical industry also adopted the plan. It is evident that these and other disastrous events caused the external legitimacy of the chemical industry to be at its lowest ebb worldwide. In a Dutch study at the end of the 1980s it was found that only 15% of the population was sympathetic toward the chemical industry (Meulblok, 1996). With the adoption of the Responsible Care Program, the chemical industry accepts its social responsibility and professes to strive for improvements in the areas of health, safety, and the environment. An important part of this program is that all people working in a company are involved in these improvements and the implementation of quality programs. Companies like to communicate with their stakeholders about the results of these improvements. In many cases, this communication may take place in so-called Community Advisory Panels, which consist of a group of neighbors of the company and other stakeholders who on a regular basis discuss with company officials issues of public concern relating to the company. Environment, safety, and social issues are key topics on the agenda of these meetings. The Community Advisory Panel has many of the characteristics of the democratic approach to risk communication.

Working on a better reputation for better crisis and risk communication

We strongly contend that an organization should put a sufficient amount of effort into creating a relation with the relevant stakeholders before some crisis may occur. In our view it is evident that the best way for organizations to work on this relation is to adopt the assumptions and practices that are characteristic of what we have called the democratic approach. Therefore, probably the most important aspect of crisis communication takes place before a crisis strikes, and not, as common sense logic or the technical-elitist approach may suggest, during or after the crisis. This implies that crisis communication is not just a reactive or a defensive phenomenon and not as is sometimes argued 'risk communication in a hurry'. On the contrary, adequate crisis communication focuses primarily on preventive, proactive activities which enable the organization to start communicating with relevant stakeholders at a more unhurried pace. This pacing creates an opportunity for the organization to get an idea of the company's reputation with these stakeholders, to monitor important developments, and to be able to come to adjustments in policies when needed. In the organizational literature we find many accounts of the positive effects of an open approach and the influence of the external surroundings on organizational performance indicators, such as its reputation, its earning capacity, and its external legitimacy (see, for example, Fombrun & Rindova, 2000). Effective risk communication with its positive influence on the organization's reputation may even have a cushioning effect on the negative reactions after an incident or a crisis (Fombrun, 1996). On the other hand, ineffective or nonexistent risk communication may be counterproductive. We have argued that risk communication operating out of the technical view is probably ineffective. Lofstedt and Renn (1997) perceive the crisis Royal Dutch Shell experienced in 1995 during the so-called Brent Spar affair as a classic example of 'Risk communication gone wrong'. The controversy surrounding the plans by Shell and Exxon to dump the

Brent Spar in the Atlantic is attributed to several factors, among which Shell's complete lack of insight into the societal environmental concerns and the total lack of an open dialogue with the public. This particular case made Shell and other private sector organizations aware of their vulnerability to these societal reactions and pushed them to reflect on other strategies for coping with these situations. For Shell this process resulted in a significant change from a defensive / reactive mode of operation to an accommodating/ proactive risk communication strategy (Fombrun & Rindova, 2000).

Some final remarks

Finally, an important aspect of the current model is that the communication culture in the organization and the autonomy of the communication department are crucial to the adequate handling of crisis communication. The communi-

cation culture is dependent on the climate, and the ideology or philosophy of the organization. When the dominant culture in the organization is skeptical of the feasibility of adequate risk communication, e.g., due to conflicting notions about the participation of stakeholders in the risk decision-making, it will be difficult for the organization to maintain these activities for a longer period. The dominant culture also determines the organization's perception of what is the best relation with the relevant stakeholders, and the choice of the crisis and risk communication strategy. When the communication department lacks organizational autonomy, it will be difficult for it to operate adequately and autonomously from its own responsibility and expertise when there is a crisis. In situations of normal operation, when communication activities aim at building and maintaining relations with relevant stakeholders, communication is ideally a diffracted responsibility of all managers and many of the employees within the organization (Gurabardhi & Gutteling, 2001).

References

- Beck, U. (1986). *Die Risiken Gesellschaft*. Frankfurt am Main: Suhrkamp.
- Cvetkovich, G., Vlek, C. A. J. & Earle, T. C. (1989). Designing technological hazard information programs: Towards a model of risk-adaptive decision making. In C. A. J. Vlek & G. Cvetkovich (Eds.), *Social decision methodology for technological projects* (pp. 253–276). Dordrecht: Kluwer Academic Publishers.
- Covello, V. T., Von Winterfeldt, D., & Slovic, P. (1987). Communicating scientific information about health and environmental risks: Problems and opportunities from a social and behavioral perspective. In V. T. Covello, L. B. Lave, A. Moghissi, & V. R. R. Uppuluri (Eds.), *Uncertainty in risk assessment, risk management, and decision making* (pp. 39–61). New York: Plenum Publishing Corporation.
- Douglas, M., & Wildavsky, A. (1982). How can we know the risks we face? Why risk selection is a social process. *Risk analysis*, 2, 49–51.
- Fessenden-Raden, F., Fitchen, J. M. & Heath, J. S. (1987). Providing risk information in communities: Factors influencing what is heard and accepted. *Science, Technology, and Human Values*, 12, 94–101.
- Fiorino, D. (1990). Citizen participation and environmental risk: a survey of institutional mechanisms. *Science, Technology & Human Values*, 15(2), 226–243.
- Fischhoff, B., Slovic, P., & Lichtenstein, S. (1981a). 'The public' vs. 'the experts': perceived vs. actual disagreement about risks. In: H. Kunreuther (Ed.). *Risk: A seminar series*. Laxenburg: IIASA.
- Fischhoff, B., Slovic, P. & Lichtenstein, S. (1981b). Lay foibles and expert fables in judgements about risks. In T. O' Riordan & R. Kerry Turner (Eds.). *Progress in resource management and environmental planning*, 3, (pp. 161–202). New York: John Wiley and Sons.
- Fombrun, C. J. (1996). *Reputation: Realising value from the corporate image*. Boston, MA: Harvard Business School Press.
- Fombrun, C. J., & Rindova, V. P. (2000). The road to transparency: reputation management at Royal Dutch/Shell. In: M. Schultz, M. & M. J. Hatch (Eds.). *The expressive organization*, pp. 77–96. Oxford: Oxford University Press.
- Freudenburg, W. R., & Pastor, S. K. (1992). Nimby and LULU: Stalking the syndrome. *Journal of Social Issues*, 48, 39–61.
- Freudenburg, W. R., & Rursch, J. A. (1994). The risks of 'putting the numbers in context': A cautionary tale. *Risk Analysis*, 14, 949–958.
- Gurabardhi, Z., & Gutteling, J. M. (2001). De relatie tussen externe risicocommunicatie en de interne communicatie van organisaties. *Handboek voor Interne Communicatie*. Alphen a/d Rijn: Samsom.

- Gutteling, J. M. (1999). *Crisis Communicatie: Een kwestie van vertrouwen: een debat*. Alphen a/d Rijn: Samson.
- Gutteling, J. M., & Kuttischreuter, M. (in press). The role of expertise in risk communication: Laypeople's and expert's perception of the millennium bug risk in the Netherlands. *Journal of Risk Research*.
- Gutteling, J. M., & Wiegman, O. (1996). *Exploring risk communication*. Dordrecht: Kluwer Academic.
- Heath, R. L., & Nathan, K. (1990-91). Public Relation's role in risk communication: Information, rhetoric and power. *Public Relations Quarterly*, 35, 15-22.
- Jasanoff, S. (1989). Differences in national approaches to risk assessment and management. Paper presented at the symposium 'Managing the problem of industrial hazards: The international policy issues'. Washington DC.
- Johnson, R., & Petcovic, W. L. (1986). *The risk of communicating risk*. Paper presented at the annual meeting of the Society of Risk Analysis, Boston.
- Jong, J. M. de, Gutteling, J. M., Koopman, B. R. & Seydel, E. R. (2000). Genetische manipulatie: Maatschappelijke reacties en communicatieprocessen. *Tijdschrift voor Communicatiewetenschap*, 28 (2), 165-180.
- Kasperson, R. E. (1986). Six propositions on public participation and their relevance for risk communication. *Risk Analysis*, 6, 275-281.
- Kasperson, R. E., Renn, O., Slovic, P., Brown, H. S., Emel, J., Goble, R., Kasperson, J. X. & Ratick, S. (1988). The social amplification of risk: A conceptual framework. *Risk Analysis*, 8, 177-187.
- Kraus, N., Malmfors, T. & Slovic, P. (1992). Intuitive toxicology: Expert and Lay judgments of chemical risks. *Risk Analysis*, 12 (2), 215-232.
- Kreps, G. L. (1986). *Organizational communication*. New York: Longman.
- Liu, J. T. & Smith, V. K. (1990) Risk communication and attitude change: Taiwan's national debate over nuclear power. *Journal of Risk and Uncertainty*, 3, 331-349.
- Lofstedt, R. E. & Renn, O. (1997). The Brent Spar controversy: An example of risk communication gone wrong. *Risk Analysis*, 17 (2), 131-136.
- Margolis, H. (1996). *Dealing with risk: Why the public and the experts disagree on environmental issues*. Chicago: University of Chicago Press.
- Marra, F. J. (1998). Crisis communication plans: Poor predictors of excellent crisis of public relations. *Public Relations Review*, 24(4), 461-474.
- McCallum, D. B., Hammond, S. L. & Covello, V. T. (1991). Communicating about environmental risks: How the public uses and perceives information sources. *Health Education Quarterly*, 18, 349-361.
- Meulblok, L. (1996). *Imago onderzoek Akzo Nobel Hengelo*. Afstudeerscriptie Opleiding Toegepaste Communicatiewetenschap, Universiteit Twente.
- Otway, H. (1987). Experts, risk communication, and democracy. *Risk Analysis*, 7, 125-129.
- Peters, R. G., Covello, V. T. & McCallum, D. B. (1997). The determinants of trust and credibility in environmental risk communication: An empirical study. *Risk analysis*, 17 (1), 43-54.
- Renn, O., Webler, T. & Wiedemann, P. (Eds.) (1995). *Fairness and competence in citizen participation, Evaluating models for environmental discourse*. Dordrecht: Kluwer Academic.
- Rowan, K. E. (1994). The technical and democratic approaches to risk situations: Their appeal, limitations, and rhetorical alternative. *Argumentation*, 8, 391-409.
- Slovic, P. (2000). *The perception of risk*. London: Earthscan.
- Wiegman, O., Gutteling, J. M. & Cadet, B. (1995). Perception of nuclear energy and coal in France and the Netherlands. *Risk Analysis*, 15 (4), 513-521.
- Witte, K. (1994). The manipulative nature of health communication research. *American Behavioral Scientist*, 38, 285-293.

ABOUT THE AUTHOR

Jan M. Gutteling (Rotterdam, the Netherlands, 1954) studied psychology and is currently senior lecturer at the Twente Institute for Communication Research (TwICoR) of the University of Twente in the eastern part of the Netherlands. Since 1990 Gutteling has published approximately 40 scientific articles, book chapters, and reports, among which the monograph 'Exploring Risk Communication' (1996) and the (Dutch) book 'Crisis Communicatie: een kwestie van vertrouwen: een debat' ('Crisis communication: A matter of trust: A debate') (1999). Contact: j.m.gutteling@wmw.utwente.nl