


Valerie November · Yvan Leanza

# Risk, Disaster and Crisis Reduction

Mobilizing, Collecting and Sharing  
Information

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Valerie November  
CNRS  
Laboratoire Techniques Territoires  
et Société (LATTS)  
Paris, France

Yvan Leanza  
Laboratoire Psychologie et Cultures  
Université Laval  
Quebec City, QC, Canada

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# Risk, Disaster and Crisis Reduction

# Preface

The fact that information is available does not necessarily mean that those who receive it are well informed. Nor does the fact that information is being circulated mean that it will be taken up by those who could make good use of it. This has become apparent during the various crises and disasters that have shaken our planet in recent years. For this reason, any reflection focussing solely on the receipt of the information, the production of the information or the means of communication is bound to be fragmented. The book you are now holding is the final element of a project that started in 2006 with the formation of a special research team and the submission of a request for funding to the Geneva International Academic Network (GIAN) – called SNIS (Swiss Network for International Studies) since 2008. This request, and the project that was then funded, put forward an innovative approach intended to highlight the conditions required to achieve a satisfactory information flow in areas related to risk, through close observation of the way this information is collected, indexed, processed, distributed and used. One of the principles on which the project was based was Bateson's definition of information as "a difference that makes a difference" (1972). Given that such a difference only makes sense in a universe of meaning, or in a specific context, achieving the objective of the project required an interdisciplinary team and multiple research sites. Only with such a wide range of perspectives, methods and contexts related to the "risks" would it be possible to take a fresh look at the circulation of information in a way which goes beyond the limits of a given discipline or individual local characteristics. Thus, at the instigation of Professor Valérie November, a research team was formed combining geographers specialising in risk, sociologists working in the field of science and techniques, and psychologists specialising in intercultural research methods. As expected, the project is founded on a sound theoretical basis and a thorough methodological procedure; these will also be presented in this book.

A project of this nature would have been impossible without the necessary contacts in various regions of the world, and in the governmental and non-

governmental organisations involved in risk management. The GIAN's mission is precisely to promote interaction between university institutions and international organisations. The research team could be assured of the cooperation of various bodies:

- The World Health Organisation (WHO), in the person of David L. Heymann M.D., Assistant Director-General – Health Security and Environment
- The Secretariat of the United Nations International Strategy for Disaster Reduction (UN/ISDR), in the persons of Silvano Briceño and Marie-Lou Darricau, at the time respectively the director and library manager of the Secretariat
- The *Bureau National de Gestion des Risques et des Catastrophes* of the government of Madagascar, in the person of Claire Rahasinirina
- The non-governmental organisations Medair (Nicolas Crettenand; Antananarivo, Madagascar), the WESDE Association (Léopold Kemkeng; Maroua, Cameroon) and PROSENAT (Jacques Unkap; Yaoundé, Cameroon)

This collaboration made it possible to include in a single research project three areas, each of which, in its own way, has to produce, process or distribute risk-related information: the SHOC Room of the WHO in Geneva; the field library project of the library of the UN/ISDR; and the activities of the two NGOs in Cameroon, WESDE and PROSENAT.

On the research institution side, the project was run by the University of Geneva (Yvan Leanza and André Wamba) and the ENAC faculty of the Ecole Polytechnique Fédérale de Lausanne (Valérie November, Charlotte Cabasse, Katia de Conto and Basile Barbey). During the course of the project, Yvan Leanza was appointed a professor at Laval University in Quebec. He continued to contribute to the project from Canada, with the help of a research assistant, Ekaterina Smali. Other participants were John Horekens, as consultant for international organisations, and Mireille Lador, as webmaster.

The results and reflections that emerged from the project have been published in a variety of ways. Firstly on a website – [www.riskinsitu.info/home.html](http://www.riskinsitu.info/home.html) – and then later in a research report. A seminar held in Geneva on 5 November 2007, at which the content of this report was discussed by the members of the research team and representatives of the organisations involved. Following the seminar, a good practices guide was prepared and distributed. The final stage in the process is the publication of this book. Chapter 1 offers a new vision of the circulation of information in risk situations, and sets out the methodological framework used in the study of the three areas. Each of these areas is covered in detail in a separate chapter, starting with the WHO SHOC Room (Chap. 2), then crisis management in Madagascar (Chap. 3), and finally an analysis of the way information circulates during the activities carried out by the NGOs WESDE and PROSENAT in Yaoundé and Maroua (Chap. 4). We conclude in Chap. 5 with a synthesis of the discussions that took place at the seminar at which the results were presented and some theoretical considerations outlined in Chap. 1. It includes also the guidelines offered to risk management practitioners. While responsibility for the publication of this book lies with Valérie November and Yvan Leanza, other members of the research

team were involved in the drafting of certain chapters. Katia de Conto contributed to Chap. 2; Charlotte Cabasse and Basile Barbey to Chap. 3; Ekaterina Smali and André Wamba to Chap. 4; and John Horekens to the conclusion. In addition, Estelle Lépine, of the EPFL, kindly assisted with the rewriting and updating of Chaps. 2 and 3. Valérie November would like to thank Christophe Buffet for his attentive rereading of the chapter on Madagascar.

We would like to express our sincere thanks to all those mentioned above, without whom this complex and ambitious project would not have been possible. Special mention is due to the GIAN for their financial contribution, as well as to the School of Architecture, Civil and Environmental Engineering of the EPFL for their translation support during the research project. We would also like to thank Joanna MacDaniel for her translation of this book, Boris Calame for his help for the figures, François René de Cotret and Rhéa J. Rocque for their editorial help and the publishing team at Springer for their support and their patience.

Paris, France  
Quebec City, QC, Canada

Valerie November  
Yvan Leanza

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# Chapter 1

## Risk and Information: For a New Conceptual Framework

In the field of risks and crises, both the circulation of information and access to relevant information are seen as crucial factors. These two facets are well documented and everyone has agreed that they are essential (Maisonneuve et al. 1999; Maisonneuve 2005; Kasperson and Kasperson 2001, 2005; Pidgeon et al. 2003; Brodhag 2000; Bakis 1995; Rodriguez et al. 2007; Papy 2008). However, certain aspects remain unclear, most notably: the fact that the information is available is not enough to ensure that those for whom it is intended are informed. In other words, simply circulating the information does not mean that it will be picked up by those who could benefit from it. This has been amply demonstrated by the various crises and catastrophes that have shaken the planet in recent years. When the tsunami struck Southeast Asia in December 2004, not all those who could have been informed were aware of the approaching wave. Furthermore, this information was not available to all coastal dwellers to the same extent, leading to the evacuation of some hotels, but not of some villages. In many places, it was not possible to raise the alert in time, given the speed of events or the prescribed circuits for circulating such information (Bird and Lubkowski 2005). There are also many examples of information being retained or deliberately not being passed on. Consider, for example, the number of people who fell ill or died following the catastrophic events of 11 September 2001 in New York: having answered their president's plea to help the victims, for several months they breathed in air containing highly toxic dust particles. The Environmental Protection Agency (EPA) was aware that the air contained significant amounts of asbestos and unprecedented levels of dioxins, but no information about this was made public. Although the EPA has explained its conduct (Environmental Protection Agency 2003), the subject remains highly controversial. A number of associations (residents and NGOs) are fighting for compensation for the victims (for instance, Sierra Club 2006).

In order to be able to deal with risk situations and crises, it must be possible for information – when it circulates – to be understood and interpreted by a wide

range of actors, working in fields such as health and natural or environmental risks. The key works relating to communication advocate the following: the information circulating should target specific destinations, and the roles played by each level of the organisation should be clear to all the actors involved. This is the familiar model of the transmitter and the receiver (the Shannon and Weaver model of 1949) which, although it has since been criticised and refined by a number of researchers, remains the predominant model.

However, in practice, the situations involving the circulation of information are more complex, less linear and far more heterogeneous. For example, in some cases the large amount of information available fails to reach the correct destination, while in others, the information is found and used, allowing the level of risk to be reduced. Surprisingly, literature on risks, in particular on the area of the communication of risks, has paid relatively little attention to these complex situations. *By observing closely, in three very different situations, the way in which information is gathered, processed, distributed and used, this book examines the countless reformulations, redefinitions and even reorientations to which all information is subjected. This multiple reformatting, at least according to the hypothesis put forward in this book, is an important element in ensuring that the information produced circulates and reaches those for whom it is intended.*

This hypothesis has a number of implications: it requires an original approach and a theoretical framework, which allows the successive formatting of the information to be charted. It also requires the means to follow – literally – how risk information is generated and how it is used and transmitted. Moreover, this hypothesis means having to exclude preconceived definitions of risks and adopting an intentionally open framework. The aim is not to examine the dialogue that ensues when a risk situation or crisis occurs, since this has been amply dealt with by previous publications (cf. among many others, Jasanoff 1994 on Bhopal or Suraud 2007 on the AZF disaster, Suraud et al. 2008, and also Chilvers 2008), nor to consider the role of the public (cf. Pearce 2005; Davidson et al. 2007, to name but a few), nor to propose a guide for the communication of risks (which has already been done very well by others, in particular Lundgren and McMMain 2009; Maisonneuve 2005; Heath and O’Hair 2008). The intention is rather to analyse the way in which information circulates in situations of risk and crisis. To highlight the actual process, it is necessary to establish the stages of a progression and to present four successive theoretical milestones (statements). The first statement relates to crises and risk situations and the need to integrate temporality and spatiality into the understanding of risks. The second concerns the importance of taking account of the contextualised facts and varied levels of knowledge inherent in all risk and crisis situations. The third shows how information should be seen as a process and a succession of interpretations. Finally, the fourth stage sets out the milestones for a new conceptual framework for the circulation of information.

## 1.1 A Contemporary Look at Risks: Risks Are Plural and Transcalar

Over the last 15 years, there has been a change in the way risks are understood. This began with the realisation that the boundaries between natural risks and other types of risks (social, environmental, political or technological) were becoming increasingly difficult to define, since the various categories of risk seem to be intrinsically linked. As Pelling puts it (2003: 5), ‘The difficulty of disentangling natural hazards from other sources of threat to life and livelihood – especially from technological hazards and social hazards of violence and war – is frequently commented upon by disaster researchers’. This vision of risks was first put forward in the United States, in the field of ‘disaster studies’ by researchers such as Burton, Kates and White (1978); Blaikie et al. (1994)<sup>1</sup>; Hewitt (1997); Mitchell (1999); Cutter (2003); and Wisner et al. (2004). This stance implies examining the phenomenon of risk in all its diversity. Hurricane Katrina could be considered from the point of view of natural hazards, but this would be to ignore other types of risk that also contributed to the disastrous consequences of the hurricane: ‘The hurricane itself may have been natural, but the disaster is attributed more to the human contribution made by neglect of the levees, over-reliance on large-scale flood control projects, the destruction of wetlands and barrier islands that could have buffered impacts of the hurricane, and decisions that put evacuees at risk of death and injury’ (Tierney 2007, quoting Cutter 2005).

This idea is gaining ground, and the first edition of the United Nations’ report entitled ‘Global Assessment Report on Disaster Risk Reduction’ (UNISDR 2009) for the first time refers explicitly to the need to consider different risks – natural, environmental, social or even political – as a whole, rather than divided into sectors. What was initially a simple statement has now become widely accepted.<sup>2</sup> This has important implications for the analysis of risks, as it is now possible to use the same theoretical framework to study all risks, whether they be natural, technological, social or environmental. The ‘Big Split’, separating nature and society, is no longer needed (Latour 1993), as it forms an obstacle to a relevant analysis of the dynamics of the risks observed.

Following on from the plural dimension of risks, another idea has gained ground, driven by its inclusion in Beck’s book (1992 [1986 for the German original]). We are now facing risks that are no longer isolated, easily identified geographically and within the responsibility of a single actor; rather, these risks have moved from local to global (e.g. climate change, which is a worldwide preoccupation while remaining

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<sup>1</sup>It should be noted that this book is the second edition by Blaikie et al. (1994), which has been considerably reworked and expanded, in particular with regard to the subject of vulnerability.

<sup>2</sup>Nevertheless, the old categories do still reappear, particularly during conferences, which offer separate sessions dealing with natural risks, major technological risks or social risks; in addition, some books deal with these risks in separate chapters.

a local risk with regard to the submersion of certain islands and the first climate refugees) and now involve a multitude of different actors.

Risks associated with technology, health or natural phenomena tend to be identified and addressed by a whole range of actors, each with their own (formal and/or informal, collective and/or individual) procedures for taking the necessary steps required to prevent serious events or disasters. As a result, each risk situation generates its own process of arguments, strategies, calculations, alliances and procedures, which may lead to the subsequent adoption of preventive measures, with their respective spatial effects. Risk assessments must incorporate an analysis of their spatial dimensions, allowing for the fact that space is never neutral: space influences the implications of risk just as risks affect and alter spaces themselves. The spatiality of risk is always multifaceted (November 2008). Unlike disasters, risks are virtual threats, even though manifestations of risks have very real consequences. Consequently, the main challenge is to understand the concept of risk as it is defined and used by practitioners and then to recognise the role risks play in transforming the collective (Latour 2005). Only then will it become possible to grasp all the complexities of the relationship between risk and territory, and only then will the spatiality of risk help to improve our understanding of how to manage the risks that are so characteristic of contemporary societies.

The geographical scales affected by the risks are increasingly interlinked. Risk situations concern local territories and actors as well as meso- or macro geographic levels (Healy 2004; November 2002). The methods of monitoring and managing risks can be implemented simultaneously at different levels. A range of uncertainties – economic, scientific and ecological – remains, leading to a proliferation of views regarding the risks. Today, the risk analysis must include a transcalar approach – in parallel with an interdisciplinary analysis – setting out an explicit link between the local dimensions of risks and their development at national and international level.

These two ideas are emblematic of contemporary risks. However, while they are largely accepted and promoted by both researchers and risk professionals, they are by no means always taken together at the theoretical or methodological level. Let us now turn to information and examine the current issues in this field.

## **1.2 Information as a Process**

It is said that never has so much information been in circulation and at such speed. Access to information has increased considerably thanks to new information technologies. Frequently, in the event of a disaster, information is first passed on via Twitter, Facebook or the web. However, being informed and aware of the risks is not enough; it is important to know how to use this information at the right time, in the right place and with the right people. Indeed, it has been demonstrated that in most risk situations and crises, the problem was not the lack of information but rather the fact that the information available did not lead to action. This applies to

all levels in the chain. When discussing information provided to the public, Holmes observes that, 'While communicating with the public about an emerging infectious disease outbreak will be vital, it would be a mistake to assume it is simply a matter of informing the public about what steps to take to protect themselves' (Holmes 2008: 354). Communicating, and Ensuring that information circulates, is immensely complex. The first issue is to recognise that there is clearly a dynamic to information that requires further study.

According to Bateson (2000 [1972]: 459), information is 'a difference which makes a difference'. He tells us that information is not energy, nor does it contain any. It is simply this item of 'news' (in the journalistic sense) which derives from a relationship between at least two things. It is qualitative and only arises within meanings or context. Among the infinite number of possible differences between these two things, only those which have a relationship with other existing parts of the context are effective differences, in other words, bits of information. The following questions need to be asked: What are these 'differences' which become relevant in a crisis situation? How can these differences, which has arisen in a particular sociocultural and professional context, that is to say, anchored in a specific symbolic universe, be extended and then used by people in a different sociocultural and professional context? The research carried out by Fessenden-Raden et al. (1987) shows that, 'risk communication should be looked at not only in terms of how accurate, detailed, or intelligible the information is, but also in terms of how the information will be interpreted. Receivers of risk information are not just empty receptacles to be filled with simplified technical information about health risks but rather play a critical, interactive role in the process of risk communication' (p. 101). Paton's research (2008) also demonstrates that it is not the information as such that determines the action but how people interpret it and give it meaning in the context of their experience, beliefs and expectations. The second issue recognised today is that of the different interpretations through which all information passes.

These questions are among those covered by the field of risk communication. Starting in 1986, this area of study has become very fashionable (Plough and Krinsky 1987; Renn 1998; McComas 2006) and since then has been the subject of a considerable amount of literature (in particular Covello et al. 1986; Covello et al. 1989; Kasperson and Stallen 1991; Pidgeon et al. 2003; Gutteling and Wiegman 1996). According to a commonly used definition, '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 et al. 1986: 172). However, despite this issue having been identified from the outset, as can be seen in the inset below taken from Renn and Levine (1991), several elements have prevented the interpretation inherent in the existence of all information from being taken into account.



The literature offers different sets of objectives for risk communication, usually centred on a risk management agency as the communicator and groups of the public as target audiences. The list of objectives for entering a risk communication programme includes the following items:

1. Enlightenment function (to improve risk understanding among target groups)
2. Right-to-know function (to disclose information about hazards to potential victims)
3. Attitude to change function (to legitimate risk-related decisions, to improve the acceptance of a specific risk source, or to challenge such decisions and reject specific risk sources)
4. Legitimation function (to explain and justify risk management routines and to enhance the trust in the competence and fairness of the management process)
5. Risk reduction function (to enhance public protection through information about individual risk reduction measures)
6. Behavioural change function (to encourage protective behaviour or supportive actions towards the communicating agency)
7. Emergency preparedness function (to provide guidelines for emergencies or behavioural advice during emergencies)
8. Public involvement function (to educate decision makers about public concerns and perceptions)
9. Participation function (to assist in reconciling conflicts about risk-related controversies)

(with kind permission from Springer Science+Business Media: Communicating Risks to the Public, Credibility and trust in risk communication, 1991, 177–178, Renn, O., & Levine, D).

The following key points were discussed: firstly, the lack of attention paid to the context was highlighted. For Otway and Wynne (1989), this is explained by the fact that the paradigm of risk perception, together with that of risk communication, has remained deaf to the differences in the contexts in which the information is produced and transmitted. In their opinion, there are several reasons for this weakness, 'First, the risk perception tradition evolved from attempts to understand and overcome controversy about the social acceptability of hazardous technologies - although wrongly framed in terms of context-free risk acceptance. This early focus on acceptance subtly shaped our thinking as attention shifted from perception to communication of technological risks. Second, psychometric approaches to risk perception are quite limited, partly because they reflect a discipline that assumes that cognitions can be defined by what goes on in the head of an individual, excluding the social context in which cognitions are created and used. While appearing



to benefit from the context-free universalism of the natural sciences, much risk perception work actually imposes a rigid and unrealistic set of assumptions about the relationship between experts and publics in the management of technology.’ (Otway and Wynne 1989: 141–142)

These authors believe that each organisation should reflect its own information culture. ‘For example, emergency information may be disseminated either via the police and prefecture systems, which have authoritarian and secretive relationships with the public, or via environmental authorities, which usually reflect more decentralized and liberal social relationships. Even when agencies are collaborating in response to the same communication requirements, the source of information can shape its meaning’ (Otway and Wynne 1989: 142). It is also possible to pay greater attention to the context (in a spatial sense this time), as stated by Castenfors and Svedin (2001), referring to a quasi-accident in Stockholm, which occurred in an urban environment, since ‘urban context provides very different types of information receivers, all of whom do not seek information in the same way, using the same language or the same cultural reference frames’.

It should also be noted that trust is at the heart of the response to an item of information, as described by Paton (2007, 2008), Poortinga and Pidgeon (2004) and Renn and Levine (1991). The familiarity of risk and crisis situations has a very marked effect on the level of trust accorded to the information circulating. ‘When dealing with low familiarity hazards, people are more reliant on expert sources and [...] it is how they evaluate the information and its sources that determines their actions, not the presence of information *per se*’ (Paton 2008: 8).

In the field of health care, for example, patients see doctors as being the ones with access to knowledge; they are expected to keep up to date with their subject through ‘guidelines’, scientific articles or training (Chapple et al. 2002). Such management and access to information represent one of the key aspects of the quality of health care. The information circulation systems must be particularly efficient in risk or crisis situations, be this in the face of a potential epidemic or when managing the medical consequences of a natural disaster. This health-care information calls upon a specific type of knowledge, drawn largely from Western medical science. Like any knowledge, this medical knowledge has its basis in society, and its boundaries are constantly changing. Certain anthropologists have no hesitation in considering this particular medical world – biomedicine – as a culture in its own right (Good 1998; Helman 1994; Lupton 1994). It produces its own representations of health and illness, as well as its own values and attitudes towards the health of individuals (such as what it is ‘morally’ acceptable or not to do with one’s own body). Despite its universal vocation, this symbolic universe is not shared by the whole of humanity, especially with regard to the rationality of thought and behaviour (Young 1981, 1982; Kirmayer 1992). The information produced by this culture cannot be understood immediately by all the actors for whom it is intended. Conversely, information produced by sources not initiated into the biomedical culture may be ignored by the medical experts and not be included. When it comes to exchanges relating to health risks or crises on a global scale, the parties involved must not only establish a dialogue based on multiple national,