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978-0-521-52044-7 - The Social Amplification of Risk

Edited by Nick Pidgeon, Roger E. Kasperson and Paul Slovic

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Introduction

Nick Pidgeon, Roger E. Kasperson, and Paul Slovic

The past twenty-five years have seen considerable social science research on the risks of technologies and economic activities, and an even lengthier legacy of studies on natural hazards. This work has generated a substantial knowledge base from which to interpret such issues as the sources and causes of changing risks and the ways in which various groups and different societies assess, view, and cope with those risks. In particular, risk perception researchers have investigated in depth how judgments about perceived risks and their acceptability arise, and how such judgments are related to risk “heuristics” (e.g. the memorability, representativeness, and affective qualities of risk events) and the qualitative characteristics of risk (e.g. voluntariness or catastrophic potential). Patterns of risk perception have also been found to relate to both group and cultural affiliations. Meanwhile, dramatic events such as the Chernobyl disaster, the BSE (“mad cow”) and the genetically modified crops controversies in Europe, the September 11th attacks in the United States, and the prospect of global climate change have driven home to responsible authorities and corporate managers the extensive intertwining of technical risk with social considerations and processes. As Kai Erikson (1994) succinctly puts it, modern disasters present us with a “new species of trouble.”

These events and the growing knowledge base are changing the ways in which societies assess, respond to, and communicate about risks. In the United Kingdom in the early 1990s, the Royal Society Study Group on Risk had as a specific mandate the task of bridging the gap between scientific knowledge and “the way in which public opinion gauges risk and makes decisions” (Royal Society 1992, p. 1). More recently in the United States, the National Research Council, in a dramatic break with its earlier “red book” on risk assessment and management (National Research Council 1983), reconceived risk analysis and characterization as an “analytic and deliberative process,” whose task is “to describe a potentially hazardous situation in as accurate, thorough, and decision relevant a manner as possible, addressing the significant concerns of the interested and affected parties, and to make this information understandable

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and accessible to public officials and the parties” (Stern and Fineberg 1996, p. 2). The United Kingdom Interdepartmental Liaison Group on Risk Assessment (1998a; see also United Kingdom Cabinet Office, 2002) similarly called for major revisions and significant broadening in the conduct of risk assessment, with greater attention to social issues, risk communication, and public involvement. In short, the institutional climate is changing substantially, enlarging the prospect of broad-based social research on risk attracting more interested users and greater institutional embrace.

But social research on risk, despite substantial progress, is still quite handicapped in seizing the opportunity. In theoretical terms, the risk perception and risk communication literatures remain seriously fragmented: between the psychometric paradigm and cultural theories of risk perception; between postmodernist and discourse-centered approaches and behavioral studies of risk; between economic/utility-maximization and economic-justice approaches; and between communications and empowerment strategies for risk communication. Meanwhile, a professional and cultural divide continues to separate the natural-hazards and risk-analysis schools of inquiry, despite the obvious and considerable convergence of interests. Clearly, a more comprehensive and systematic understanding of the social experiences of risk is crying out for overarching, integrative approaches.

To this end, researchers from Clark University (Kasperson, Kasperson, Renn, and colleagues) and Decision Research (Slovic and colleagues) created the social amplification of risk framework (SARF) in 1988. The framework (outlined in detail in Kasperson et al. this volume chapter 1) aims to examine broadly, and in social and historical context, how risk and risk events interact with psychological, social, institutional, and cultural processes in ways that amplify or attenuate risk perceptions and concerns, and thereby shape risk behavior, influence institutional processes, and affect risk consequences.

The present book aims to evaluate the current state of our knowledge about amplification theory and processes, illustrated through a wide range of contemporary case studies and examples. We wish also to examine where the amplification framework holds important lessons for contemporary risk policy and risk communication practice. The germ for such a project started when over thirty academics and policy makers, drawn primarily from North America and Europe, met to debate these issues in September 1999 in the delightful setting of the St. Catharine’s Foundation conference centre, Cumberland Lodge, in the Windsor Great Park, England. Participants at the workshop included both the originators of the framework and other leading international researchers of risk

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perception and communication issues. We were fortunate in gaining sponsorship for this workshop from a group of United Kingdom Government Departments (under the auspices of ILGRA and the United Kingdom Health and Safety Executive). Written papers were prepared by authors in advance of the workshop, stimulating an extensive set of debates. Following the Cumberland Lodge workshop all of the papers were subject to peer review, and revised (in most cases substantially) on the basis of the reviews and workshop discussions.

The book itself is organized into five thematic parts, although most chapters inevitably touch upon several of the themes (for example, all of the authors were asked wherever possible to conclude their contributions with lessons learned for risk communication and policy). Part I addresses the Conceptual Foundations of the social amplification framework (SARF), and in chapter 1, Jeanne and Roger Kasperson, together with Nick Pidgeon and Paul Slovic, describe the basic framework, at the same time reviewing fifteen years of research. They include the empirical record and its relation to the domains of communication and the media, stigma and effects, trust in institutions, and organizational risk processing. The authors also debate a number of the critiques of SARF which have been advanced over the past fifteen years. In chapter 2, Eugene Rosa critically evaluates the key philosophical foundation of SARF – the ontological status of risk. Steering a course between social constructivist and realist representations, Rosa develops the framework in relation to sociologist Luhmann's distinction between risk and danger, and to lay ontologies of hazards. Glynis Breakwell and Julie Barnett in chapter 3 draw upon the observation that amplification and attenuation processes are complex dynamic social phenomena which almost always involve several levels (or layers) of social process, and accordingly of potential evidence. They describe a new approach – the layering method – that can be used to further develop and test the empirical claims of SARF, and hence to increase the predictive power of models designed to understand risk amplification. Its use is illustrated with data collected in relation to BSE and AIDS/HIV. Finally, in chapter 4, William Freudenburg turns attention to the important question of organizational processing of risk issues. He argues that extending the social amplification framework to incorporate organizational issues will require greater attention to be given to two issues. First, the ways in which “real risks” are created, amplified and/or dampened by the very persons and organizations that are expected to control or manage them. These “human” and “organizational factors” can be important or even dominant contributors to the overall risks from complex sociotechnical systems. Second, the issue of understanding what kinds of risks are most and least likely to receive intensified attention from

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the mass media and the broader public. His suggestion is that intensified attention is likely in cases where an incident suggests the potential presence of organizational *recreancy*, or institutional failure.

From a policy perspective, the conceptual chapters in part I illustrate the point (which also recurs in other parts of the book) that SARF does not itself address the basic political, sociological, or psychological processes which might underlie amplification or attenuation of risk signals and perceptions in any *specific* context. What is needed is an understanding of which other theoretical models might then be used in conjunction with SARF, such that conceptual explication and specific predictions can be advanced. For risk communication policy this implies, above all, a need to explore the context (and the history) of events, trying to understand the key actors or issues (media, historical stigma, trans-national politics, blame and mis-management, interest group behaviors, legislative or political cultures etc.) *in the particular case at hand*. The appropriate social science models can then be drawn upon to guide understanding of that case.

Following on from the above, the links between risk controversies and the prior behavior of agencies and risk managers is a key policy theme. As Freudenburg (chapter 4) notes, rather than responding to the substance of citizen concerns, policy makers of the past have sometimes employed “diversionary reframing” – attempts to divert attention *away* from citizens’ real concerns by “reframing” the debate as being “about” something else, and that such efforts have often failed to counteract credibility problems, often backfiring. For the future, according to Freudenburg, there would appear to be significant potential benefit in exploring an entirely different approach – not of trying to divert policy attention *away* from citizen concerns, but instead taking them seriously as one part of the risk assessment and management process. Not only have a growing number of analysts come to focus on the problems associated with what Barry Turner (1978) originally called “organizational exclusivity,” or the “disregard of non-members,” but some have also come to suggest that increased “institutional permeability” may deserve much greater attention as an antidote to the blind-spots created or reinforced by such forms of insularity. Agencies in particular might do well to examine their *own* recent history, roles, assumptions, and frames of reference for understanding risk, and the extent to which risk management will fail if critical assumptions are subsequently proved wrong.

In part II of the book we turn to the important issue of Risk Signals and the Mass Media. Media analysis provides an important route for empirical tests of the core idea that important social sites exist, of which the media are but one, where messages about risk are constructed,

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communicated, and transformed. In chapter 5, Lynn Frewer introduces social psychological theory on trust and attitudes, which might prove fruitful in understanding how the dynamics of attitude change and media reporting of risk issues are related. She illustrates her argument with data on media coverage and public attitudes in Europe in relation to Chernobyl and, ten years later, the BSE crisis. In chapter 6, John Eldridge and Jacquie Reilly draw upon an extensive sociological programme of research, conducted by the Glasgow Media Group over the past ten years, looking at media, risk discourses, and political responses to the BSE crisis. On the basis of this case study they question whether a generalized notion of “climate of risk,” as advanced by social theorists Giddens (1991) and Beck (1995b) amongst others, can fully explain the complex relationship that exists between scientific experts, policy makers, and the media. They conclude that SARF does indeed help to describe certain aspects of the dynamics of the BSE affair, but that further development of the framework, in particular stressing conceptual issues drawn from symbolic interaction theory (Blumer 1969), might prove fruitful. Related conceptual arguments are advanced by Graham Murdock, Judith Petts, and Tom Horlick-Jones in chapter 7. Their chapter presents results from empirical work in the United Kingdom across a range of risk issues, noting also that media analysis for risk research purposes might usefully draw upon the wealth of existing experience and theorizing in the area of mainstream media studies. They highlight the very different risk representations adopted by the national press in the United Kingdom (e.g. tabloid vs. broadsheet newspapers), as well as the balance between mediated and lay understandings in public perceptions of these issues. Drawing upon Pierre Bourdieu’s work (e.g. 1998) on “fields of action” they argue that the media are both highly differentiated in their reporting of risk, and a key political site for the social framing of such issues. In chapter 8, Arvind Susarla addresses the concept of blame – previously identified as an important contribution to risk controversy and amplification processes (Burns et al. 1993). In a comparative study, he investigates blame signals in the local press reporting of two risk events in India, one of which was ultimately highly amplified (discovery of bacterium *Yersinia Pestis* in the city of Surat) and the other attenuated (arsenic contamination in West Bengal). Susarla finds different, and complex, patterns of blaming adopted in the two cases.

Issues of trust and blame are likely to be the key to both amplification and attenuation effects. However, in keeping with other recent commentators on this issue we conclude here that trust is not a simple “uni-dimensional” construct that can be simply “lost” or “replaced.” Like amplification effects themselves, trust is a highly contextual,

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multi-dimensional concept – involving such things as knowledge/expertise, implied public duty, a match between stated roles and corporate “body language,” independence of a risk regulator, and the ability or resources to act upon intentions. A lesson then from a number of the chapters is that risk managers should *not* take a naive view of “trust.” Hence, Murdock et al. stress the need for a design-based approach to risk communication, incorporating, presumably, attention to structural factors which might be influential on trust.

Part III presents a range of case studies involving Public Perceptions and Social Controversy. In chapter 9, Marc Poumadère and Claire Mays recount their research into an intriguing set of events during 1995–96 in the small town of Moirans, in the Jura Mountains of France. More than a dozen “spontaneous” house fires occurred here, with two deaths. As the cause remained unknown, media, politicians, and a range of local and national technical experts became increasingly involved in the search for the origin of the fires (with one hypothesis focusing upon underground electricity cables). The events, whose cause was finally tracked down to an arsonist, are analyzed theoretically using the social amplification framework, with focus upon the complex social and institutional dynamics surrounding the case. In an extension to the basic framework Poumadère and Mays suggest that risk discourse processes can themselves feed the dynamic construction of new signals about “risk events”. Chapter 10 by Donald MacGregor reports data from his empirical study of public perception of responses to Y2K in North America during 1999. He argues that many of the manifest hazards created by Y2K arose from behaviors individuals adopted as part of risk *mitigation* (e.g. carrying large amounts of cash increasing crime risks). Thus the Y2K phenomenon (and its risks) may, in large part, have been a self-fulfilling prophecy exacerbated by social amplification processes. MacGregor also addresses possible reasons for the different public response to Y2K in the United States, in comparison to that in Europe. In chapter 11, Tom Horlick-Jones, Jonathan Sime, and Nick Pidgeon draw upon the tradition of qualitative risk research, investigating the underlying sensemaking activities entailed in communities living close to major sites of industrial activity. The analysis examines how the interaction of “local” experiences, politics, and symbolic linkages raises key conceptual issues for the original social amplification framework. In particular, “audiences” are not merely passive receivers of risk information, but have the capacity and inclination to engage actively in interrogation of risk communications and other related risk information.

In chapter 12, Peter Wiedemann, Martin Clauberg, and Holger Schütz develop a typology of lay narratives (or “risk stories”) which might be

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implicated in the process of intensification of risk perceptions. Drawing upon the case of electromagnetic fields they describe the different ways in which “expert” and “lay” people might appraise such risks. As pointed out by Fischhoff (1995) risk communication efforts have often foundered on the misplaced ideal that “all we need to do is tell people the numbers.” While an understandable view, as seen from the perspective of technical risk assessment, it misses the fundamental point about risk perceptions derived from decades of research – that anxieties, fears, and responses are sometimes based upon factors other than “objective” risk itself. Accordingly, the work of both Murdock et al. (chapter 7) and Wiedemann et al. (chapter 12) moves us in an important new direction. The former by asking what risk “narratives” are used in the media, and the latter by analyzing how the incompatibility of expert and lay narratives of risk might lead to amplification effects. Narrative (a coherent “story”) can be a very powerful means of framing risk messages. The issue of using narrative for risk communication seems a fruitful area for further development in relation to social amplification of risk.

An important proposition of the social amplification framework was that amplification or attenuation of perceptions might feed into secondary “ripple” economic, social, or symbolic (e.g. stigma) consequences. Pidgeon (1997) has noted that it is often very difficult to obtain clear empirical evidence of the links between stage I processes of SARF (signal transformation and risk perception) and stage II effects (behavioral, economic, and symbolic impacts). In part IV we consider Ripple and Stigma Effects in greater detail. Chapter 13, by M. V. Rajeev Gowda, builds upon SARF to explain the proliferation in the USA of community “right-to-know” legislation in relation to the release of former sex-offenders (so-called “Megan’s Laws”), contrasting this also with similar pressures in the United Kingdom. The analysis draws upon Kingdon’s (1984) agenda-setting model to discuss the critical role played by the availability of viable policy solutions in the political stream (demonstrating, once more, how stepping out of the traditional risk communications and perception domain can productively build upon the framework which SARF provides). In the United States right-to-know is politically hard to oppose because it is supposed to empower people’s risk management efforts, and seems innocuous in terms of its potential impacts and administrative burden. Gowda analyzes the unintended social consequences (e.g. uncontrolled vigilante action) of such laws in terms of secondary amplification “ripple” effects. By contrast the contemporary word “risk” applies to nuclear power first and foremost, and many early studies of risk perceptions were focused upon public concerns about this issue. Chapter 14 by James Flynn uses SARF to chart the historical and

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contextual reasons for the gradual stigmatization in the United States of nuclear weapon and energy technologies. Past organizational failures and undue secrecy, only now coming to light, are seen as crucial contextual drivers of such stigmatization. The fact that organizations themselves are a risk factor is almost never examined in formal risk assessments, and this chapter (also Freudenburg chapter 4) argues that they should be. More generally, as our knowledge of such “secondary” consequences increases, it becomes feasible that risk assessments for new technologies might explicitly incorporate them as a legitimate part of the consequence analysis during risk assessment.

In part V we conclude with two chapters which explicitly address social amplification in the context of Risk Policy and Management (although, as noted above, policy is a theme that weaves through all of the contributions to this book). Chapter 15, by William Leiss, asks whether SARF can help government agencies better meet their responsibilities. Public sector bodies with risk management responsibilities are ideal test beds for exploring the potential practical efficiency of the risk amplification concept, because they must take responsibility for both doing risk assessments and “responsible risk issue management.” Responsible risk issue management is seen as primarily an exercise in good risk communication practice: specifically taking responsibility for the creation and maintenance of a “fair risk dialogue.” Using wireless telecommunications as a case example, Leiss develops the possibilities of improved managerial competence. Inviting the public to be a part of the decision making process in risk analysis and its management has, of course, been a major recent objective in European and North American risk policy arenas. As a consequence, deliberative and participatory mechanisms have become increasingly important in the risk communication arena, and look set to be so for the foreseeable future. They can be seen as vehicles for appropriate two-way risk communication between policy makers and public, as discursive devices that empower communities, or sometimes as both (Pidgeon, Hood, Jones et al. 1992). However, the current popularity of such concepts obscures the challenge of how to put these worthwhile objectives into practice. Ortwin Renn addresses this considerable challenge in chapter 16. He reports work drawn from the extensive experience of the Center of Technology Assessment at Baden-Württemberg in participatory processes in Germany. In particular, Renn argues that people can experience both amplification and attenuation of risk perceptions in participatory settings. His argument draws upon material from two case studies: first, that of solid waste incinerator siting, and second of noise reduction. Renn draws the important inference that risk amplification and attenuation can be made a *deliberate* subject of discursive activities within

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participatory risk management procedures. Such discourse helps people to realize that it is normal, but also detrimental to prudent judgment, if one selects and transmits only those pieces of information that one likes, if one amplifies signals that support one's own view and attenuates those that do not. This holds out hope that greater understanding (if not necessarily consensus over) competing positions can be arrived at in conflicted risk debates.

Reflecting on the chapters as a whole, a range of broader issues can be discerned. A critique of the original 1988 formulation of SARF was of its rather static conception of communication. Unfortunately, as Horlick-Jones, Sime, and Pidgeon (chapter 11) point out, it is precisely those aspects of SARF that seem most problematic from an academic perspective which make the framework attractive to policy makers! However, in our view the work represented in this book *does* begin to demonstrate that the framework – used in a nuanced way – can help us to understand some of the complexities, constructedness, and messiness of real world risk communication contexts, and in this way both aid policy makers as well as map out a future research agenda.

To illustrate just some of the complexities, for policy makers one desired goal might be some form of simple *screening device* against which emerging or nascent risk issues can be evaluated. In discussing this Leiss raises the normative status of amplification effects, and points out that while clear-cut examples of good and bad attenuation and amplification can always be cited, in reality risk regulators are often faced with a basket of issues which are far less clear cut; that is they fall into a “holding” category where the implications of the issue are ambiguous or uncertain. Similarly, the contextually embedded nature of risk controversies, and *simultaneous* layering of amplification and attenuation effects across different stakeholders or publics in society (e.g. chapters by Breakwell and Barnett; Poumadère and Mays; Renn) makes screening for any particular “effect” more problematic. However, the chapters in this book illustrate that we probably *do* know enough about the key drivers, of risk intensification at least, to begin to map out research to develop such screening devices for policy.

The chapters probably say less about the cross-cultural transferability of SARF (originally developed primarily in the North American social context), than we would have liked. Some of the authors (e.g. Gowda's work on Megan's Laws; MacGregor's on Y2K) do touch upon interesting United States / Europe contrasts, and the possible reasons for this. Other chapters (Susarla; Poumadère and Mays; Renn) document amplification effects in rather different cultural contexts from that of North America. However, well-founded cross-cultural analysis would ideally require

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detailed *comparative* empirical work, which we do not currently have. On the other hand, detailed case studies (e.g. Poumadère and Mays; Flynn) can be used to highlight specific cultural issues which might be driving issues in specific contexts. Ultimately, the existence of such differences is an empirical question, and this cautions against simple transfer of findings (on perception of a new technology, say) from one cultural context to another without at least some such empirical work of one form or another.

Taken as a whole we do believe that the chapters in this book represent a significant step forward in our knowledge and thinking about the social amplification of risk framework, as well as its relationship to risk policy and risk communication practice. As editors we are deeply indebted to each of the individual authors and reviewers for helping us to achieve this goal.