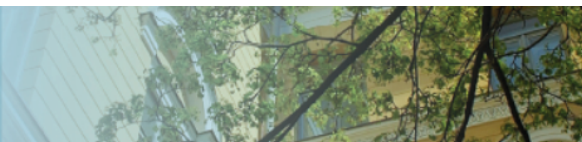


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Media and Scientific Risk: Moving Towards New Research Agendas through Fuller Definitions

1. Introduction

Risk is an enduring by-product of our complex technological and social institutions.¹ Yet, risk is a much-debated term, with differences in assumptions about what risk constitutes leading to different approaches to its communication. In an extensive review of various disciplinary definitions of risk, Althaus notes a key distinction between definitions that identify risk as a reality that exists in its own right in the world versus definitions that view risk as a social construction.²

Defining risk as a reality that exists in its own right is a perspective that sociologists have variously called “natural objectivism”³ or “realism”.⁴ This positivistic perspective is based upon objective scientific knowledge and economic calculation. Historically, as the mathematics of probability was worked out during the 18th and 19th centuries, risk entered the expanding world of finance, and became a useful tool in the conceptualisation of the probable consequences of investment decisions.⁵ Discoveries in Mathematics, Economics, and Psychology enabled risk to be understood and measured.⁶ For instance, in economic and statistical terms, the concept of risk has traditionally been set apart from uncertainty. With risk, “the distribution of the outcome in a group of instances is known ... while in the case of uncertainty this is not true, the reason being in general that it is impossible to form a group of instances, because the situation dealt with is in a high degree unique”.⁷ This

treatment of risk as a calculable, and therefore controllable, entity has dominated institutional risk-assessment practices, being widely employed within Science, Medicine, Health, Economics, Law and Engineering.

However, it has long been argued by social constructionists that societies' recognition and perceptions of risk do not parallel actual objective risk calculations. Social constructionist accounts define risk as a reality by virtue of a judgment made by a person or the application of some knowledge to uncertainty.⁸ As such, the social constructionist approach sees risk as comprising two elements. The first element is manufactured uncertainty: "The essence of risk is not that it *is* happening, but that it *might be* happening. Risks are manufactured, not only through the application of technologies, but also in the making of sense and by the technological sensibility of a potential harm, danger or threat".⁹ Here, risks are seen both as the (by)product of human endeavour rather than an act of God or fate,¹⁰ and they are also seen as socially constructed – something is not a risk until it is perceived as such, and this may be a function of one's measuring instrument and/or the sense one makes of the measurements. This leads onto the second element of risk as consisting of value judgements, in particular, personal and socio-political questions of acceptability.¹¹

These differences in perspectives on risk are important because they have decisive implications for risk communication. Natural objectivists/realists are likely to think that people generally do not know about, or understand, probabilities, and that they need to know these probabilities to be informed adequately about risk. From this perspective, risk communication is largely a process of disseminating information about probability from experts to lay people. Social constructionists are less likely to

approach risk communication with specific assumptions about what people need to know. Instead, they will see risk communication as bridge-building between discourse communities – that is, between groups who share a particular social context with evolved patterns for conceptualising and discussing risk.¹² For social constructionists, perceptions of risk are influenced by how social problems are defined in society's recognised arenas of public discussion. Some take this social constructionism to the extreme, suggesting that information creates reality.¹³ Milder forms of social constructionism argue that the media influence what, and how, things come to be defined as public issues,¹⁴ facilitating the development of "risk consciousness".¹⁵ Yet, during the 1990s, as Cottle¹⁶ notes, prominent social theorists of risk and late modernity ignored the relevant work of mass communication researchers. Today, there is no such lacuna, and media-oriented theoretical and empirical research about scientific risk (loosely defined, to include technological, environmental and health risks) proliferates. Perhaps echoing natural objectivists' communicative tendencies, a dominant thrust to this body of work is its focus on the media's role in providing risk knowledge to inform citizens.¹⁷ Within this area, there is a distinct pattern of text-based and audience-based studies. Focussing on research papers that are self-consciously about scientific "risk issues", these patterns are overviewed below, thereby highlighting under-explored avenues of research. The patterns were discerned in a non-systematic way, through two main routes. The first utilised existing overviews of the field. The second extensively trawled for relevant journal articles across a wide range of e-journal databases in the social sciences, sciences and humanities, using keywords such as media and risk. This generated over 150 articles, which were all carefully read, thereby creating an impressionistic assessment of major trends within the published research.

2. Research Patterns: Informing Citizens of Risk

From a Habermasian public sphere perspective,¹⁸ one of the media's key roles should be to provide a forum for information, facilitating debates that encompass diverse views and opinions, so facilitating the achievement of full citizenship, and acting as a check on the state by representing the public's views back to power. Given the importance of informed debate in risk issues, where socio-political questions of acceptability play a significant role in determining what is even perceived as risky,¹⁹ the quantity and nature of the risk information that the *news* media transmit are heavily researched. Here, many studies, stretching back over 30 years, show that risk reporting, being governed by journalistic organisational practices and source strategies of manipulation, bears little relationship to actual risk probabilities, being highly selective and formulaic in what and how risks are reported.²⁰ It should be noted, however, that although these findings tell us a lot about patterns of scientific risk reporting, in fact, they largely reflect findings about the reporting of *any* issue (rather than scientific risk issues per se). In repeatedly confirming general findings from the Sociology of News, we should ask what can further research on scientific *risk* reporting tell us that is new, beyond the details of the risk issue being studied, about risk reporting patterns? Whilst there are research gaps in this area –these reflect gaps in the Sociology of News in general – such as understanding patterns of news reporting in forms that are difficult to analyse because of the complexities of multi-modal visual and aural analysis – such as television news.²¹

Today, risk impacts are sharply contested, and failures of risk management systems often publicised,²² arguably intensifying public awareness of risk and scrutiny of social institutions.²³ A smaller body of research (compared to textual analysis) exists

that examines such impacts of providing risk knowledge to inform citizens. Here we find that the nature, extent and direction of media impact are heavily debated (a feature common to all media).²⁴ On the one hand, the media are seen to influence risk perceptions of the public and decision-makers, for instance in their ability to generate social amplification or attenuation effects.²⁵ Here, the media can misdirect public attention, either unintentionally, through routine news reporting structures and exploitation of these by media-aware organisations,²⁶ or intentionally, minimising the kinds of reporting that may destabilise large-scale industries, dominant institutional perspectives and the advertising revenues that accompany them.²⁷ On the other hand, assumptions about the determining influence of the mass media on the public²⁸ contain oversimplifications, as media and socio-cultural studies show the contradictions and ambivalence of audience and lay attitudes towards risk information, and the varied ways audiences actively make sense of different risk types.²⁹ Additionally, psychometric studies show that the media generally have weak effects, that they influence some of our risk perceptions, but they are only one factor among many.³⁰ Again, a bias with these studies is a focus on audience interpretation of risk communication via the *news*,³¹ although there are also studies looking at other media forms, such as audience understandings of nuclear power risks communicated through documentary,³² and environmental risks communicated through Hollywood film.³³ However, audience studies are resource-intensive and as such, there have been relatively few conducted in the area of risk, with the majority consisting of psychometric testing rather than in-depth, contextual studies.³⁴ A larger number of contextually-based audience reception studies are needed, therefore, for us to identify more specific patterns of media impacts.

3. Discussion

This paper has identified several research gaps within the dominant area in scientific media risk research of informing citizens of risk, both in the informational content in patterns of risk reporting, and the informational uptake and symbolic sense-making activities of audiences. To conclude, I suggest that whilst the study of gaps identified in this paper would provide very useful additions to knowledge, care should be taken to examine *both* parts of the media and risk dynamic.

Turning our attention first to the “risk” part of the media and risk dynamic, an immediate problem faced by media risk researchers is the question of what even constitutes a risk issue, a problematic compounded by the perspective from which the media risk researcher comes, be this social constructivism or natural objectivism. The issue of what constitutes a risk issue is not helped by the mushrooming in the number of publications claiming to be about the media and risk over the past three decades, with the establishment of several journals dedicated to risk,³⁵ and the popularisation and elaboration of social theory on risk. This raises the question: when does examination of a substantive area like “science” become a study of risk? Is it only when specifically informed by risk theory; or when the issue under examination has the recognised hallmarks of a risk issue such as being imbued with uncertainty and value judgements; or when it is published in a risk journal? What about issues that were researched before risk became a touchstone topic to which researchers migrated? Such questions are particularly important for retrospective categorisations attempting to identify patterns in media risk research, such as this paper.

Turning now to the “media” part of the media and risk dynamic, careful consideration

should be paid to the media genres and forms to be analysed. Cross-generic studies in the area of media and risk are rare, but could shed useful light into, for instance, the effects of risk information in entertainment genres compared to risk information in targeted, strategic media campaigns. Media forms also shape risk information in different ways, and potentially important media forms lack critical study from the risk perspective, such as radio, and consumer and popular magazines.³⁶ For example, in terms of studying risk and “new media” forms, Hughes et al.³⁷ suggest focusing on how the increasing ubiquity of the Internet shifts the balance between expert knowledge, lay experience, and personal testimony and whether it genuinely increases opportunities for public participation in risk debates: or whether enhanced public “feedback” is used as the basis for strategic campaigns tailored to popular preconceptions. Another area worthy of investigation is the widespread generation of eagerly misinformed publics. Scientists, for instance, query the quality of environmental scientific risk information to be found online in the blogosphere.³⁸ This raises questions like: why are scientists unwilling to engage in the production of credible blogs; what is the nature and social impact of ease and speed of access to poor quality risk information via the internet; do online media audiences possess both sufficient risk literacy and media literacy to identify misrepresentation of scientific risk in the rapidly expanding and quickly changing online environment; and what is the impact of these developments on audience trust both in the medium itself, in individual blogs; and in scientific expertise *per se*?

It is important for researchers of scientific risk and the media to focus on the interplay between the manufactured uncertainty and value judgements intrinsic to the risk under study, as well as the specific media forms in which the risk is represented, the latter

recognising that the media constitute so much more than just the news. As such, I convened the panel *Communicating Scientific Risk through Mass Media: Theoretical and Empirical Explorations*, as part of the International Society for the Study of European Ideas' 11th conference on *Language & The Scientific Imagination*, inviting contributors to discuss three themes: the media's role in placing scientific risks on public and political agendas; the media's role in shaping public acceptability of scientific risks; and deconstructing media forms in scientific risk communication. Over half of the interesting papers that were presented appear in this volume, taking us a little closer to redressing some of the gaps in scientific media risk research identified here.

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¹ Ulrich Beck, Anthony Giddens and Scott Lash, eds., *Reflexive Modernization: Politics, Tradition and Aesthetics in the Modern Social Order* (Cambridge: Polity Press, 1994), 6-12; Anthony Giddens, *The Consequences of Modernity*. (Cambridge: Polity Press, 1990), 126-129; Niklas Luhmann, *Trust and Power: Two Works by Niklas Luhmann*. H. Davis, J. Raffan and K. Rooney (trans.), (Chichester: John Wiley and Sons, 1979).

² Catherine Althaus, "A Disciplinary Perspective on the Epistemological Status of Risk," *Risk Analysis*

25 (3) (2005): 567-88.

³ Ulrich Beck, *Ecological Politics in the Age of Risk*. (Cambridge: Polity Press, 1995), 162.

⁴ Deborah Lupton, *Risk*. (London: Routledge, 1999), 33.

⁵ Peter Taylor-Gooby and Jens O.Zinn, "The Current Significance of Risk," in *Risk in Social Science*, eds. Peter Taylor-Gooby and Jens.O.Zinn (Oxford: Oxford University Press, 2006), 3.

⁶ Peter L.Bernstein, *Against the Gods: The Remarkable Story of Risk*. (New York: John Wiley & Sons, 1996).

⁷ Knight, 1921, 233, cited in Gabe Mythen, *Ulrich Beck: A Critical Introduction*. (London: Pluto Press, 2004), 13-14.

⁸ Susanna Hornig, "Reading Risk: Public Response to Print Media Accounts of Technological Risk," *Public Understanding of Science* 95 (1993); Lupton, *Risk*, 60.

⁹ Barbara Adam and Joost van Loon, "Introduction: Repositioning Risk; the Challenge for Social Theory," in *The Risk Society and Beyond: critical issues for social theory*, eds., Barbara Adam, Ulrich Beck and Joost van Loon (London: Sage, 2000), 2.

¹⁰ Lupton, *Risk*, 30-32.

¹¹ Taylor-Gooby and Zinn, *The Current Significance*, 1-19.

¹² Paul B. Thompson and Wesley Dean, 'Competing Conceptions of Risk', (1996) <<http://www.piercelaw.edu/risk/vol7/fall/thompson.htm>> (accessed December 2008).

¹³ For instance, Jean Baudrillard, *The Intelligence of Evil or the Lucidity Pact*, (Oxford: Berg, 2005), 32; Paul Virilio, *The Information Bomb*, London: Verso, 2000), 119.

¹⁴ Jenny Kitzinger et al., *Media Coverage of the Ethical and Social Implications of Human Genetic Research*, Final Report to the Wellcome Trust (London: The Wellcome Trust, 2000 [Online] <http://www.cesagen.lancs.ac.uk/resources/docs/2finrepwell.doc>. (Accessed 25/11/07);

¹⁵ Beck, U. *Risk Society: Towards a New Modernity*, (London: Sage, 1992, p. 23, 132f).

¹⁶ Simon Cottle, "Ulrich Beck, 'Risk Society' and the Media: A Catastrophic View?" *European Journal of Communication* 13 (1) (1998): 8-32.

¹⁷ For other patterns see Vian Bakir, "Media and Risk Research: Old and New Directions", *Journal of Risk Research* (forthcoming 2009).

¹⁸ Jurgen Habermas, *Structural Transformation of the Public Sphere* (Cambridge: MIT Press, 1989), 27; Jurgen Habermas, "Further Reflections on the Public Sphere," in *Habermas and the Public Sphere*,

ed. Craig Calhoun (Cambridge: MIT Press, 1992), 421–61.

¹⁹ Taylor-Gooby and Zinn, *The Current Significance*, 1-19.

²⁰ For overviews, see the following: Emma Hughes et al., “The Media and Risk,” in *Risk in Social Science*, eds. Peter Taylor-Gooby and Jens O.Zinn (Oxford: Oxford University Press, 2006), 250-70; Mythen, *Ulrich Beck*, 73-94; Anders A.F Wählberg and Lennart Sjöberg, “Risk Perception and the Media,” *Journal of Risk Research* 3(1) (2000): 31–50.

²¹ Michelle S.Driedger, “Risk and the Media: A Comparison of Print and Televised News Stories of a Canadian Drinking Water Risk Event,” *Risk Analysis* 27(3) (2007): 775-86.

²² Taylor-Gooby and Zinn, *The Current Significance*, 1.

²³ Mythen, *Ulrich Beck*, 80; Brian Wynne, “Misunderstood Misunderstandings: Social Identities and Public Uptake of Science,” in *Misunderstanding Science? The Public Reconstruction of Science and Technology*, eds. Alan Irwin and Brian Wynne (Cambridge: Cambridge University Press, 1996), 19-46.

²⁴ Virginia Nightingale and Karen Ross, *Critical readings: Media and audiences*. (Maidenhead: Open University Press, 2003), 14.

²⁵ Kasperson et al. “The Social Amplification of Risk: Assessing Fifteen Years of Research and Theory,” in *The Social Amplification of Risk*, eds. N.Pidgeon, R.E.Kasperson and P.Slovic, (Cambridge: Cambridge University Press, 2003): 13-46.

²⁶ Vian Bakir, “Greenpeace v. Shell: Media Exploitation and the Social Amplification of Risk Framework (SARF),” *Journal of Risk Research* 8(7-8) (2005): 679-91; Vian Bakir, “Policy Agenda-setting and Risk Communication: Greenpeace, Shell and Issues of Trust,” *The Harvard International Journal of Press/Politics* 11(3) (2006): 67-88.

²⁷ Lynn Frewer, “Public Risk Perceptions and Risk Communication,” In *Risk Communication and Public Health*, eds. Peter Bennett and Kenneth Calman (OUP, Oxford), 20-33; Edward S. Herman and Noam Chomsky, *Manufacturing Consent: The Political Economy of the Mass Media*, (Pantheon Books, 1988), 2, 12.

²⁸ For instance, Beck, *Risk Society*, 23, 32.

²⁹ Judith Petts, Tom Horlick-Jones and Graham Murdock, *Social Amplification of Risk: The Media and the Public*, (Sudbury, HSE Books, 2001), 68-70; Wynne, *Misunderstood Misunderstandings*, 19-46; Hughes et al., *The Media and Risk*, 250-70.

³⁰ For a good overview, see Wählberg and Sjöberg, *Risk Perception*, 31–50.

³¹ Petts et al., *Social Amplification*; Jenny Kitzinger and Jacquie Reilly, “The Rise and Fall of Risk Reporting: Media Coverage of Human Genetics Research, 'False Memory Syndrome' and 'Mad Cow Disease'” *European Journal of Communication* 12 (1997): 319-350.

³² John Corner, Kay Richardson, Natalie Fenton, “Textualising Risk: TV Discourse and the Issue of Nuclear Energy,” *Media, Culture and Society* 12 (1990): 105-24.

³³ Thomas Lowe, Katrina Brown, Suraje Dessai, Miguel de França Doria, Kat Haynes, Katharine Vincent, “Does Tomorrow Ever Come? Disaster Narrative and Public Perceptions of Climate Change,” *Public Understanding of Science* 15 (2006): 435–57.

³⁴ Petts et al., *Social Amplification*.

³⁵ For instance, *Risk Analysis: An International Journal* (launched in 1981), *The Journal of Risk Research* (launched in 1998), and *Health Risk and Society* (launched in 2000).

³⁶ Petts et al., *Social Amplification*.

³⁷ Hughes et al., *The Media and Risk*, 31–50.

³⁸ Alison Ashlin and Richard J. Ladle, “Environmental Science Adrift in the Blogosphere,” *Science* 312 (April) (2006), 201.