Book Review

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Nanotechnology and the Public: Risk Perception and Risk Communication
by: Susanna Hornig Priest
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This is a competent, highly relevant and up-to-date essay on social risk responses to a technology that has attracted a wide commentary. The blurb does not make it clear who the intended readership is, but it appears to be people with a professional or scholarly interest in the subject – perhaps academics, their students, journalists and staff in regulatory agencies and possibly industrial firms. It provides a wide-ranging survey of recent work in the area, rather than ground-breaking scholarship, but the writing throughout is lucid and accessible. There is no obscure or difficult, technical language, although I did sometimes find the text a little repetitive. In some respects, it is also quite speculative, notably about how future perceptions of the technology might develop. Unusually, but usefully, a series of short contributions by other authors are incorporated at the end of each chapter. In the remainder of this short review, I will summarise briefly, and no doubt inadequately, what the book says. And I will then comment on its main themes.

A brief synopsis

The first chapter makes some general points about risk perceptions and communications in a democratic society in the developed world – perhaps best seen as a background to the subsequent material. This is followed by a chapter on 'introducing nanotechnology to the public' – a relatively informal discussion of perceptions around risks arising from nanotechnology, and a mild, balanced advocacy for public engagement and a broadly-constituted process of risk communication in policy making. At the same time, the author suggests a complacency and social risk attenuation about nanotechnology that contrasts with concerns about biotechnology – and the genetic modification of foodstuffs particularly. The third chapter is on risk communication 'theory and practice' and provides a fairly wide-ranging and well-informed discussion of the main issues in risk communication.

The fourth chapter – on public opinion, perception and understanding – again is not particularly about nanotechnology but uses genetically modified foodstuffs as its opening case. This demonstrates problems not of inadequate understanding but of underpinning values – values related to the means and conditions of production as much as to the hazards of consumption. The 'deficit' model of an ignorant public needing the communication of more risk-relevant knowledge does not seem applicable in this light. Yet the nature of the GM controversy is contrasted with lack of concern about nanotechnology, so it becomes hard to see what relevance the GM experience has for nanotechnology risk communication specifically. There is an account of public nanotechnology opinion surveys, presenting a relatively favourable account of opinion towards the technology, with some variations between countries. This makes the nanotechnology risk perception story a somewhat less interesting one than that of genetic modification, and the author explains its lack of 'cultural resonance'. Nonetheless, there is an attempt to extract lessons for risk communicators, with a warning that it could all go the way of the BSE crisis in which a risk that appeared to start off as being minor, and under control, went dramatically awry. The contributed essay in this chapter also makes the point that media coverage of nanotechnology has so far been generally favourable in the hands of a small group of science and business writers.

Chapter 5 is titled 'What do people want from technology?' and deals with issues such as public engagement and the practice of democracy in a risk society. There appears to be an obvious discrepancy between democratic ideals and the inaccessibility of advanced technical knowledge relevant to understanding risk issues. The author refers to one of her own studies indicating a lack of knowledge among consumers even of products already containing elements of nanotechnology. But she also argues that the non-expert publics have broadly favourably expectations of technology in general, 'despite contrary historical experiences', and that such contrary experiences are best understood as exceptions that do not substantially contribute to most people's expectations. The incorporated essay describes a particular approach to public engagement in the USA known as the National Citizens' Technology Forum, a descendent of the 'consensus conference' that originated in Denmark. Although the description is broadly favourable, there is an indication that such engagement can lead to frustration rather than empowerment when there is no clear conduit into the policy making process.

Chapter 6 – on 'Audiences, stakeholders, cultures, and nanotechnology risk' – starts with reports of specific hazards of nanotechnology that have emerged and discusses some of the difficulties of regulation. It argues that risk communication should be seen as something directed towards regulators and policy makers as much as lay publics. There is a discussion about risk-related advocacy, and its limitations. And there is a return to individual and social risk perception, and the reasons why nanotechnology has not (yet) generated substantial anxiety. A section on 'persuasion research' appears somewhat inconclusive on the question of who has been trying to persuade whom of what in the nanotechnology arena. The first incorporated essay is on the role of the public in governance processes, discussing US practice specifically. Its most interesting point was perhaps the fairly brief description of Jasanoff's 'technologies of humility' whose specific relevance to nanotechnology, disappointingly, was not developed. The second incorporated essay contrasts policies and perceptions in the USA and Europe. It is not especially illuminating, concluding that the picture is 'complex', with indications that US publics might be more optimistic – but not conclusively so, and without a very

satisfactory account of what this all means for our understanding of risk perception and communication.

Chapter 7 is on 'Disseminating information about new technologies' and concentrates on the role of the 'mass media', which inform a large part of the population not only about the technology but about discussions and opinions about the technology. The limitations on their fulfilling this role are discussed, particularly with the shift to internet-based media about which the author is plainly ambivalent – discussing the contrasting diagnoses of functionalist and conflict theories of the part that information media play in a society. There is also a discussion of how influential the media are, in reality, and again the picture is, of course, 'complex' – and only made more so in the internet age. The incorporated essay reports on a study of the mass media coverage of nanotechnology in the USA and the UK. Perhaps the most telling result was that the coverage was slight, and having peaked around 2006 appears now to be in decline. Most of the coverage, moreover, was of news events related to the technology, such as Prince Charles' notorious comments, rather than investigation of the technology itself in any serious sense.

The final chapter, on 'Lessons and future challenges', admits that 'nanotechnology in the public sphere has not developed as expected' in terms of science-fiction induced anxieties. There is some explanation of why this has been the case, in terms of cultural resonances and social risk amplification effects, but the author also points to the dangers of an impoverished capacity in science journalism. The final incorporated essay, at the end of this chapter, discusses the ethics of risk communication and the negotiation of a path between arousing unreasonable anxiety, on the one hand, and pandering to industrial interests, on the other. There are some interesting ethics involved in communicating with the intention of causing changes in behaviour – a practice that is of course 'commonplace in the public health tradition'.

A comment on the contribution

Overall, the book provides a relatively informal but convincing account of scholarship and practice in risk communication around nanotechnology. It is perhaps disappointingly inconclusive. It finds relatively little public anxiety and no dominant tendency in risk perception around nanotechnology. And it draws few strong conclusions about the adequacy of risk communication processes, or even about their nature. It looks like a well-motivated and accomplished, but ultimately not very fruitful, effort to make something out of a diverse but limited body of empirical work that fails to reveal any great insight. Its value therefore comes not from any startling conclusions but from being a survey of the many relevant concerns, issues and findings that are relevant to how a complex society comes to terms with a new body of technologies. This coming-to-terms process is in its early stages in the case of nanotechnologies, and at the moment simply fails to reveal any very strong or dramatic phenomena underlying risk responses. This may change, or it may not, and we have to accept that effects like 'social risk amplification' or its opposite sometimes simply do not arise. Although the author does claim that nanotechnology might represent a case of social risk attenuation, the claim appears to be based on the lack of dramatic responses, not research that shows public risk perceptions to lie well below expert risk assessments, nor any particular evidence for a social mechanism that would bring about attenuation.

The absence of a strong finding, or polemic, does not detract from the basic worth of the book in helping us understand the relevant issues. Its value also lies in its forward-looking orientation. The technology broadly seems to lie at that tantalising stage where uses have emerged but are not ubiquitous, and public perceptions are clearly nascent and ill-formed. It is too early to know how nanotechnology will evolve as a risk issue, but it is not too early to take an interest in processes of risk communication and engagement that *might* become more necessary in a future where specific instances of the technology, in specific areas, become much more controversial and perhaps hazardous than can be currently envisaged.

In terms of its structure, the book lacks a preface that would give some guide to the logic of its development. As it stands, the eight chapters break down the topic into reasonably logical parts, but the sequence in which they are addressed appears somewhat random. The nanotechnology context goes in and out of focus through the book, so the chapters move between the general and particular for no clear reasons. A more obvious thread of argument or exposition would have been helpful to me – or at least a preface that explained why the chosen structure should make sense.

In places, I also felt that the book was somewhat lacking in references to the literature, both to support some of the general claims the author makes (for example, about the basis of lay risk perceptions) and to help the reader follow specific points in more depth. Overall, plenty of original material is cited, but there are parts of the work where more references did seem to be needed.

The coverage is international but strongly US-centric. All the contributors except one give US affiliations, and frequent reference is made to institutions and publics in the USA. The first incorporated contribution looks especially strongly US-oriented, and refers to things coming from non-US sources simply as ‘foreign’. The others feel more balanced. But I got the impression that a US audience was sometimes being assumed. I spotted very few errors, but one of the contributed sections looked error-prone (on page 11 an angstrom is equated to ‘0.01 of a nanometre’, and on page 12 the author refers to ‘kenetic energy’).

In all, the book provides a successful summary of what we know in this area – but should probably not be read in the expectation of a strong theoretical account of what moves a society’s risk responses, nor dramatic findings of social processes going seriously wrong.