OF COURSE IT'S SAFE, TRUST ME!

Conceptualising issues of risk management within the 'Risk Society'

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Introduction

One might be forgiven for thinking that notions of risk appeared to adopt a higher media perspective during the latter part of the 20th Century than in previous periods of our history. This was due, in part, to the many and varied media conceptualisations of the problems that are allegedly facing society. For many, the media assault on our senses created a feeling that the world was becoming a more dangerous place. Humans seem to be discovering more exotic ways to die or to be severely injured as a result of the activities of modern societies. Even nature appears to be determined to exact a greater price from the human race through El Nino and a range of natural disasters. Of course, such expressions of the risk problem at the start of the second millennium rather mask the complexity of the many problems that face humankind. To an extent, it is this complexity and the uncertainty of our knowledge around the issues of hazard that creates, and sits at the heart of, the risk problem. Thus a key part of contemporary difficulties lies in our (in)abilities to make sense of 'risk'. This is especially so within a highly charged environment in which trust, issues surrounding the burden of proof and the legitimacy of expertise are crucial issues. Indeed, a proliferation of concern with risk seems to have arisen at a time when questions are being asked of both the ability and even the willingness of government to 'protect' society from the complex web of risks that seem to face us (see Rose, 1996). Some recent examples serve to illustrate the nature and extent of the problem.

E. Coles, D. Smith and S. Tombs (eds.), Risk Management and Society, 1–30.

On one level, there seems little doubt that our societies are now more informed about risk than at any other time in human history. The visual impact of many forms of hazard creates an opportunity for the media to provide graphic images of destruction to the viewing public. For example, the bombing of the City of London and the virtual destruction of the Baltic exchange on 24th April 1993 illustrated to UK industry and the world's viewing public that even the largest and most powerful actors - the corporations that dominate and reside in the City of London - are not immune from the possibility of a major disruption to their business. The subsequent bombing of Manchester town centre on a busy Saturday reinforced the potential for disruption that can face business. The Oklahoma and Atlanta bombings in the USA illustrated to a shocked US public, used to seeing devastation elsewhere, that their own cities were also vulnerable. The bombing of Wall Street in February 2000 served to reinforce this vulnerability. In Japan, the gas attack on Tokyo's underground was a terrible reminder of the potential that exists for both terrorist and accidental toxic and biological contamination of our cities. The difficulties that face government in protecting the populace from such events is all too obvious. The mass evacuation of a large population center within a short period of time creates immense problems for emergency planners. The potential for such a risk was reinforced by the nuclear accident at Tokamura (1999) in the greater Tokyo area and it brought back to our consciousness the specter of widespread nuclear risk, which had been raised by the Windscale, Three Mile Island and Chernobyl accidents. Almost as if to mark the passage into a new century of ever-heightening risk, it was announced in late 1999 that a number of governments were examining the feasibility of deflecting any large asteroid or meteor that threatened to hit the earth and create the potential for the so-called "extinction level event".

Notions of risk also became manifest in new forms through the use of the very technology that was designed to improve our lives. As we entered the new millennium, the City of London, along with almost every other organisation of any size in the UK, was urged by Government to prepare for the risks associated with the use of IT and the so-called millennium bug. Organisationally-based risks were also on the public agenda. The claims by a senior clinician, made in January 2000, that the NHS was not meeting expectations prompted a knee-jerk reaction by government to put yet more money into a health service deemed to be ailing, in an attempt to placate criticism of policy failure around the core of the welfare state. However, within a month, the media announced that a patient undergoing surgery had the wrong kidney removed; he died within weeks. Rumours abounded concerning the accident rates within operating theatres and public confidence in the country's health care system was damaged still further (see Leape and Berwick, 2000). Mounting criticism suggested that health care was in crisis and that the solutions needed to be radical and would require a complete re-think of the system (see, Reason, 2000; Nolan, 2000). On top of these concerns, the highly public conviction of Dr Shipman for murder raised serious concerns over the trust that we place, and the control systems in place, within that most proximate form of healthcare, namely the GP's surgery. These criticisms coincided with a flu outbreak that not only stretched the health service's resources to the limit but also illustrated the risks that we faced from

both possible epidemics and pandemics (see Davies, 1999) and the range of viruses that face us on a global scale (Ryan, 1996). The massive advances in transport allow viruses to spread quickly beyond their normal confines. Similar advances in telecommunications ensure that the horror of these events is beamed into our homes. Those charged with managing the problem are faced with questions from a panel of experts drawn from all corners of the world. Matters are made worse by the fact that many of these viruses evolve to defy our attempts at controlling them and some, notably the avian flu virus outbreak in Hong Kong, have even jumped the species barrier (see Centres for Disease Control and Prevention, 1998a; 1998b; 1999; Davies, 1999).

The cumulative effect of such acute incidents should not be under-estimated. Yet their effects on popular notions (indeed fears) of risk are all the greater since they need to be set in a context of a vast array of seemingly intractable chronic risks. For example, in the UK, the spread of Bovine Spongiform Encephalopathy (BSE) amongst cattle, and its transmission to humans as new variant Cruzweldt Jacob Disease (nvCJD) illustrates how problems can emerge which defy the prevailing scientific paradigms operating at the time. The public conflict that resulted from debates amongst "experts" resulted in a loss of consumer confidence in government, a loss of confidence which sits at the heart of current, highly charged, debates on genetically modified foods (see Smith and McCloskey, this volume). These latter concerns are just a sub-set of concerns related to a general sense of widespread environmental damage being caused by human activity, damage that threatens to change the planet on which we live, and the conditions of our very existence. Examples are too numerous to mention, but familiar to all. The fact that the late twentieth century witnessed a global explosion of environmental concern fueled by - and perhaps fueling - the 'discovery' of new environmental hazards only illustrates how, thirty years after the warnings of Rachel Carson (1962) on the use of pesticides (and DDT in particular), societies have either failed to learn, or failed to act upon that learning.

The range of these phenomena captures an element of the range of real and perceived, acute and chronic, localised and widespread hazards within our society. Along with the evidence of an apparently unprecedented number of accidents, disasters and crises (experienced on a global scale during the 1980s and 1990s) they have served to underline the increasing realisation that there is a need to address, subject to critique, and develop what currently represents the sub-discipline of risk management. The events also illustrate the fallacy of control that predominates around issues of risk (Smith, 2000). Some of these events were unforeseen or, in some cases, their probability of occurrence was considered to be so low that they were virtually ignored in terms of preventative action. In some cases, sequences of events bypassed the defences that were put in place to prevent the accidents, or the defences were simply inadequate to cope with the demands placed upon them. Alongside a growing realisation of the extent of the hazards we face, recent years has witnessed the development of burgeoning new industries around issues of risk management. It is clear that many organisations are turning themselves, with greater or lesser efficacy, to the task of developing expertise in risk, whilst Universities and consultants in the UK, Europe and North America have

begun to develop programmes of advice, training, research and teaching in all areas of risk management. At the same time, social theorists have sought to develop new, more insightful ways of conceptualising and thus dealing with such issues. It is to a discussion of some of these concepts that we now turn our attention.

Conceptualising Risk

Whilst the notion of the risk society has attracted considerable attention within the academic literature (see Beck, 1992; Giddens, 1990), the conceptualisation of this phenomenon has also been a matter of considerable debate. For Beck (1992) the processes of modernization have given rise to the creation of risks that threaten large numbers of people and yet have become more opaque with the result that,

> "in the course of the exponentially growing production process in the modernization process; hazards and potential treats have been unleashed to an extent previously unknown" (Beck, 1992 p19).

Such concerns about risk have been expressed by a number of writers who have approached the problem from a number of perspectives (see, for example, Shrivastava, 1992; Lupton, 1999; Shrader-Frechette, 1991; 1993; Erikson, 1994; Draper, 1991; Sheldon and Smith, 1992). Despite such concerns, there are those who express strong doubts regarding the true extent of the emergence of higher levels of risk within the modern period (see Cohl, 1997; Furedi, 1997). Popular representations of risk are evident in much of the television and cinema offerings that, many argue, foretell an apocalyptic future for society. Glassner (1999) has labeled this obsession with risk a "pathology of fear". Citing health as one of a number of examples, he observes that,

> "The scope of our health fears seems limitless. Besides worrying disproportionately about legitimate ailments and prematurely about would-be diseases, we continue to fret over already refuted dangers" (Glassner, 1999, p. xii).

Glassner makes the point that our pessimistic views on life are such that if we give ourselves "a happy ending ... we write a new disaster story" (Glassner, 1999, p. xi). Whether our preoccupation with issues of risk is a symptom of the human condition, or a reflection of (and on) the state of the world in which we live, is clearly a matter of some debate. What has become clear, however, is that many of the previous notions of risk have become somewhat flawed as a means of conceptualising the range of problems that have to be dealt with by both society and the range of organisations within it. Whilst Beck has stated that "risks are not an invention of modernity" (Beck, 1992 p21), within the risk literature is clearly the argument that a shift from individually-based risk to a more widespread exposure to hazard differentiates contemporary society from its

forebears. The subtle, more opaque relationships that exist between cause and effect creates problems in terms of the knowledge base around risk generation and crisis incubation. There is widespread recognition concerning the limitations of technical expertise in issues of risk (see Beck, 1992; Fischer 1980; 1990; Collingridge and Reeve, 1986; Irwin, 1995; Lasch 1995; Smith, 1990; 2000), and on the need for a role for other forms of non-expert knowledge in risk debates (see Irwin, 1995; Irwin and Wynne, 1996). Much of this tension becomes conceptualised in terms of public-expert conflicts around the nature of the hazard and its associated probabilities. Previous attempts to deal with such issues saw them simply in terms of a deficit model, which saw the problem simply in terms of giving the public the facts about the problem and their concerns will go as a consequence. However, it is now clear that this was a flawed strategy. Information dissemination, without a foundation of trust, is destined to be treated with considerable suspicion. Never before have the public been exposed to so much information, although this also brings with it considerable problems. Lasch (1995), observes that the information given to the American public, for example, "tends not to promote debate but to circumvent it" and that "although Americans are now drowning in information ..... (they) ..... are notoriously ill informed" (Lasch, 1995, p. 11). Herein lies an apparent paradox within risk debates. Whilst publics clearly need and, indeed, have a right to, information, there is also the view that if there is too much information, then the same publics may not be able to make sense of the complex, contradictory information that they are given. Similar problems occur when publics are presented with contradictory expert opinion and this has been held to increase the extent of conflict surrounding issues (see Collingridge and Reeve, 1986). Nevertheless, a consistent though certainly not ubiquitous feature of risk debates is that it is those organisations with the greatest power (expressed in terms of capital, influence and knowledge) whose voices, views, and interpretations of events achieve dominance. The questions that remain centre on the role that 'conventional', scientifically determinist approaches to risk management may have contributed to this situation. It is here that the greatest source of tension exists within the contemporary societies seeking to manage risk, and which provides the challenge to social science research.

Research efforts within the social sciences have, over the last 25 years, sought to deal with the complex array of issues surrounding risk management. Lupton (1999) distinguishes between three main groups of social research that stand in criticism of the techno-rational perspectives on risk management. The first of these deals with the cultural/symbolic approach to risk (Lupton, 1999) which centres around the social anthropological work of Mary Douglas and colleagues (Douglas, 1980; 1985; Douglas and Wildavsky, 1982; Schwartz and Thompson; 1990). This work has focused primarily on the cultural response to issues of hazard. This has been grounded within a socio-cultural context and has adopted a structuralist approach to looking at the relationships between group cohesion and other constraints on social groups (grid-group model). This work raises a number of important issues concerning the hierarchical nature of societies, their approaches to regulation and the role of the group (rather that the individual) in dealing with issues of risk

The second body of work outlined by Lupton (1999) concerns a range of issues that are grouped around the notion of the "risk society" and it is this body of research that has, perhaps, attracted the greatest amount of attention. The risk society approach is dominated by the view that sees risk emerging from the activities of modern society and sees society reflecting upon its activities and the problems that emerge from that process. This notion of "reflexive modernization" can be formed by reference to Beck's (1992) observation that,

> "The concept of risk is directly bound to the concept of reflexive modernization. Risk may be defined as a systematic way for dealing with hazards and, insecurities induced and introduced by modernization itself. Risk as opposed to older dangers, are consequences which related to the threatening force of modernization and to its globalization of doubt. They are politically reflexive" (Beck, 1992 p.21).

Reflexive modernization raises a number of important issues with regard to risk, not least of which is this "globalization of doubt" and the impact that it has on trust, expert knowledge and power. Beck (1992) makes the point that such a process of reflexivity leads both to emergent risks from the process of modernization and also causes society to examine the "problem resulting from techno-economic development itself" (Beck, 1992 p19). Given the dominance of this literature, we shall address some aspects of this in more detail later in this paper.

The final approach outlined by Lupton is concerned with notions of governmentality. This body of work is essentially concerned with the shift in emphasis from social insurance towards self-insurance (see, Lupton, 1999; Rose, 1996). This approach to risk can be framed in terms of the ways in which reality becomes constructed through the use of various expressions of knowledge, the discourse between interested parties and the role of both expertise and institutions within the process (see Lupton, 1999). For these theorists, in the sphere of risk as in other discourses, the key trend marking advanced social orders (typified by neo-liberalism in the later decades of the last century) has been the generalised adoption of technologies of the self, through which risk is individualized. Here responsibilised individuals are being offered, or develop themselves, various ways of managing risk. At the same time, governments and states absolve themselves from various responsibilities of popular welfare. Invariably, this leads to a process of social exclusion around the ability to mitigate the consequences of such risks and results in the development of a class of people for whom hazards are possibly greater than for other members of society – a point that will be returned to later.

For our present purposes, whilst some attention will generally be focused on the work of the "risk society", elements of the other research perspectives will be incorporated into the discussion. There are, however, a number of themes that emerge within the chapters which constitute this volume. The first of these is the role of *quantification and audit* within the processes of risk analysis. This theme is significant within risk management practice and a veritable industry has emerged which seeks to

measure the extent of the risks in many of our systems and practices. The second theme that emerges concerns the role of *organisational culture* in shaping the nature of many risk debates and, indeed, incubating the potential for risk in the first place. Culture is a seductive and yet elusive term, which seems to offer considerable potential for addressing many of the issues raised by risk within modern society. It impacts upon such issues as power relationships, the role of knowledge and expertise in shaping debates and the nature of communication around risk issues. Culture can also have a dark side and may contribute to the incubation of failure potential within organisations (Smith, 1995). These issues are touched upon by a number of the contributions to this volume. The final theme that emerges within this book centres on the notion of *management* itself. Despite its widespread use as a concept, "management" can be seen as an abstract term (Lilienthal, 1967), which often defies effective description. In addition, the term often implies that managers have the ability to control the uncertainty surrounding those elements of the system in which they operate. If there was no uncertainty within organizations then there would be little need for decision making and, therefore, one might argue, for managers. If we take this argument to its logical conclusion then we can claim that managers exist to cope with uncertainty. Whilst this is hardly a radical assumption, one might question how many managers would agree with the proposition. Similarly, it could be argued that it is the inability of managers to deal with the demands of emergence (and its associated uncertainty) that creates many of the problems that are discussed in this collection of essays. The key issues center on the role of knowledge and expertise within the function of management and the manner in which uncertainty is communicated both internally and externally. Both of these issues are touched upon by several of the contributors to this volume.

Taken together, these three themes provide us with the opportunity to examine the relationship between risk generators and those elements of society that are exposed to the consequences of that risk. The remainder of this chapter considers the implications of these themes in more detail.

Quantification and Audit

Clearly identified in the chapters which constitute this volume are a whole series of techniques which are commonly used as a means of 'managing' risk. These are, for the most part, dealt with extensively within the literature, though such treatments are predominantly exhortational, prescriptive or normative. What the chapters in this volume seek to do is to explore their application, their limitations and their potential for effective risk management, through a variety of empirical and theoretical considerations. These techniques range from the 'hard' end of the continuum of risk management techniques - utilising engineering and design approaches (themselves based upon science-technology principles and quantification) - through to the 'softer' human factors, which have also adopted a quantitative approach but also have implications in terms of recruitment, training, and culture change. This broad continuum is largely explained by

the development of risk management as an activity and sub-discipline. The origins of risk management have been seen to lie in a number of academic disciplines including natural hazard research (Bourriau, 1992; White and Burton, 1980), economics and finance (Bernstein, 1996) and engineering (Rowe, 1977). More latterly, these technocratic approaches to risk have come under considerable scrutiny from the social sciences (see Fischer, 1980; 1990) although some, notably human factors and ergonomics, have themselves sought to emulate the 'scientific' approaches to risk.

Almost irrespective of its origins, risk has tended to assume a quantitative approach and this remains the dominant paradigm within the literature. Thus, as Smallman (this volume) notes,

> "Risk management is almost totally dominated by the 'quantificationists'. Their assumption is that systematic quantification of risk is the only method by which risk may be rationally analysed and measured against pre-determined objectives. Such supposed rationality, coupled to technically sophisticated risk assessment methods which parallel cost benefit analysis sits well with bureaucrats and legislators .. {it} seems to offer a feeling of security" (Smallman, **24-5**, this volume).

Such techniques have, of course, been subject to extended critique - a critique extended by several of the contributions that follow here (see, notably, Beck and Woolfson, Pearce and Tombs, Smallman, Smith and McCloskey, this volume). But the appeal of the rational-scientific paradigms in general, and the vested interests in whose hands they are often used, has served to bolster quantification in the face of its critics. Whether or not such techniques are predominant within all of the various approaches to risk management, quantification continues to play some part in most attempts to manage risk. Given that an understanding of the probabilistic dynamic of hazards requires some basis in historic data, one would expect that some benchmark against which to measure changes in its frequency would exist. However, when such an approach refuses to acknowledge the validity of other forms of knowledge and is based upon poor *a priori* data, then such an approach can invariably be called into question. When the hazards under consideration are 'new' (or emergent) and the evidence is extrapolated from laboratory-based experiments, then there obviously remains a number of problems with the quantified approach.

In the first instance, there may simply be insufficient evidence to justify a probabilistic estimation of the hazard's frequency. Such a problem faced the investigating team at the Canvey Island complex in the late 1970s. Here the solution to the lack of data was to incorporate experts' best estimates of likely failure rates into the risk assessment (see Smith, 1990). To claim that such an analysis is objective is clearly a spurious argument, especially when it is set against the supposed 'subjective' views of local residents who are exposed to the hazards. One might argue that, ultimately, all approaches to risk management are subjective, as even the most quantified approaches are set within dominant academic paradigms of the various technical disciplines

involved in the analysis. Added to this is the influence of organisational culture upon the investigating team, which raises further questions concerning the legitimacy of knowledge and the role of power and culture in shaping the social construction of that knowledge. This social legitimacy of knowledge is an important issue within the process of risk management. Lasch (1995), for example, has argued that "knowledge is merely another name for power" (p. 12), a point that has also been made by a number of observers (Collingridge and Reeve, 1986; Smith, 1990, 1991). A third area of concern is that experts often communicate only with other experts (Lasch, 1995) and this process contributes to the social exclusion of potential victims in two distinct ways. The first of these is simply that those affected by the hazards are often deemed not to be part of the "expert" community and are, therefore, either simply ignored or their views are relegated in importance. Evidence for this can be found in a whole range of debates concerning environmental impact (Irwin, 1995; Irwin et al, 1996; Smith, 1991), medicine and public health (Epstein, 1996; Bennett and Calman, 1999) and risk (Smith, 1990; Whyte et al, 1995). The second, and more subtle, form of social exclusion is through the use of a complex language of technocracy which is not generally accessible to those outside of the expert group (see Fischer, 1980; 1990; Porter, 1995; Smith and McCloskey, this volume). In most cases, this language is one of mathematics that, some argue, has become a surrogate for trust (see Porter, 1995). Trust and expertise thus combine to create our final set of concerns with the quantitative approach. Ultimately, the expert community is accountable to those organisations for whom they work and the professional bodies who accredit them. Even the regulatory agencies themselves face this problem and, therefore, one might question the democratic nature of this process. This point is best illustrated by reference to the case of health and safety management.

The UK body charged with regulating workplace health and safety - the Health and Safety Executive - has, following longstanding work by companies, trade associations, consultants and academics, begun to emphasise the use of auditing tools, performance standards, risk assessment, and the practice of benchmarking against best practice for risk management (Health and Safety Executive, 1991, 1997). All of these rely on some form of utilisable measures of health and safety performance. For the purposes of this brief discussion, we shall use the HSE's Successful Health and Safety Management (1991, 1997) (SHSM) to illustrate the main dynamics of this approach.

SHSM advocates the use of internally created and monitored performance standards. But this raises immediate problems. First, we know that there are massive (if variable levels of) under-reporting across all industries, formally revealed by HSE's use of questions in recent Labour Force Surveys (from 1990 onwards). This does not bode well for any performance standards based upon accurate measures of injuries, let alone other types of accidents. If organisations are failing to report externally, despite a legal obligation to do so, and notwithstanding moves by HSE to make such reporting simpler and less time-consuming, then one might at least be sceptical about the propensity of internal reporting systems to operate effectively. Secondly, we have to be sceptical about internal measurement because of what has been labeled the "DuPont effect". This describes the tendency for organisations to under-report incidents, especially where the

organisation places great emphasis on, or attaches rewards or sanctions, to the recording of incidents and lost time accidents. Quite perversely, therefore, safety management systems can produce very real pressures not to report injuries and other incidents. The offshore oil industry again provides numerous documented examples of the "creative" approaches, which companies have utilised in order to minimise reported lost time injuries (not least because contract firms may lose lucrative incentive bonuses). Even where incidents are reported internally, it is questionable whether these will then be reported externally if there is a belief that negative consequences may follow. These consequences may include, the raising of insurance premiums, the attention of inspectorial activity, generalised negative publicity, and so on. Indeed, today there is widespread evidence of the falsification of injury data to those 'outside' the organization, which is attributable to such forces. The recent exposure of BNFL regarding the falsification of testing data on exported plutonium (Boggan, 1999) may be rare in terms of the public profile it received, but it is far from unique.

Obviously, any unreliability within incident data is likely to distort attempts at benchmarking. It is here that auditing may come in as a useful tool for the development of more effective safety and health management systems. There are now several well-established auditing systems in use. The best known include the British Safety Council's 5 Star, CHASE, Coursafe, DUPONT, the International Safety Rating System, Management Safety Systems Assessment in the Evaluation of Risk, RoSPA's Quality Safety Audit, the Professional Rating of Implemented Safety Management, and SHARP, not to mention HSE's own Safety Climate Assessment Toolkit. The HSE itself has advocated the use of bespoke auditing systems - now available in electronic rather than simply paper forms. The HSE's view is based on evidence that where auditing systems are "structured in a way and put into operation in a way which fits with the characteristics and needs of user organisations", where they utilise information from a range of sources, and where they are subject to external verification, they can form an element of improved health and safety management.

While auditing may play a useful rule in disclosing relevant safety information, there is some evidence that the use of auditing tools can also be problematic. Where auditing is used simply as means of complying with the demands of insurers, or functions as a superficial checklist, then it may actually obscure the real work practices that are prevalent within an organisation. Perhaps most significant problem of all is that the development and use of audits in an effective manner requires a significant commitment of resources. Where such resources are not committed by an organisation and/or where incentives to underreporting are strong, we cannot expect auditing to present an effective safeguard of safety performance

The weight of this general critique of techniques of quantification and auditing - as well as the more specific considerations in the brief focus on health and safety management - is to cast considerable doubt on the validity and utility of such techniques, a doubt explored in more detail by the various contributors to this volume. At the very least, it is clear that quantification and auditing do not possess the 'hard' characteristics of rationality and objectivity ascribed to them by their proponents. Consequently, we

need to explore the "softer" and more abstract dynamics of the risk management process, namely organizational culture and the nature of "management" itself.

Organisational Culture

Culture has emerged as an increasingly fashionable approach to dealing with risk and can be seen to sit at the 'soft' end of the spectrum of risk management techniques (see Pidgeon, 1997; Reason, 1998). Indeed, this is the focus of the chapters here by both Hopfl, and by Smith and Elliott, each of which provide sectorally-based discussions of the issues surrounding culture and its relationships to risk management. Smith and Elliott focus attention upon a particular organisational culture which is based within the fire-fighting services. Their study indicates that the dominant culture of the service can create a bulwark against effective risk management (expressed in terms of occupational stress). Hopfl, by contrast, details the efforts of one specific company, namely British Airways, to institute a general programme of culture change - launched, interestingly, as a response to declining commercial performance. One element of this programme involves a thoroughgoing attention to the company's safety culture. Each avoids the generalisations, the broad prescription, and the empirical and analytical looseness which, for us, infects much of the current literature on 'culture'.

There is now a vast body of literature around organisational or business cultures, which deals with issues of measurement, categorisation and, in particular, cultural change[1]. Again reference to the context of occupational health and safety management illustrates this issue. Notions of cultural measurement and change are central to the current thinking of the Health and Safety Executive (HSE), the regulatory agency which is charged with overseeing the control of risks to employee and public health, safety and welfare in British workplaces; such notions are also inherent within a series of corporate initiatives around safety and health. For example, the HSE has repeatedly emphasised the importance of developing an effective safety culture as the precondition for successful safety management. Yet despite the great vogue of safety culture, there is hardly any agreement on what a safety culture is, how it can be measured, and - crucially - how it can be created (see, for example, Pidgeon, 1997; Reason, 1998). In 1993, the UK Advisory Committee on the Safety of Nuclear Installations, defined safety culture as

> "the product of individual and group values, attitudes, perceptions, competencies, and patterns of behaviour that determine the commitment to, and the style and proficiency of, an organisation's health and safety management" (ACSNI, 1993)

According to this broad definition, safety culture is a neutral term, which is not necessarily something that can be immediately considered as positive or negative.

Organisations are said to have effective or ineffective safety cultures, depending on those attitudes and competencies that prevail within them.

A component element of this broad definition of safety culture is the claim that "the creation of a positive culture" can only be secured by "involvement and participation at all levels" (HSE, 1991, 1997). This particular view of safety culture is informed by academic definitions of "culture" which typically embed safety culture into the disciplinary matrix of a specific academic field such as organisation studies and learning, or human factors analysis. Underlying such views is the assumption that culture can encapsulate the motivational template of an organisation and that the organisation can, in turn, take "ownership" of safety culture. This is only superficially plausible.

There are clearly some problems with this notion of culture. Chief amongst these is the assumption that a homogeneous, all-pervasive, stable set of beliefs can be generated within or imposed on the modern workplace. Workplaces, as we know them, are dynamic, complex, and often highly fragmented entities and have become even more so in recent years when organizational change has been both rapid and often unpredictable. In a world of subcontracting, out-sourcing, high turnover, short-term contracts, and 'flexible' periphery workforces, the notion of a stable organisational ethos is at best questionable. At its worst, such an assumption represents an inability to recognise the realities and insecurities of modern employment.

Apart from the question of heterogeneity of the workplace, an even more striking problem arises from the question as to who should generate the cultural beliefs adopted by the organisation. Most managers or management consultants involved in the creation of a "safety culture" have a clear idea as to who defines the term in practice, what it contains, and to what degree it is applied to the workforce. Less clear are the outcomes of these initiatives and how they should be measured. Thus 'culture' is itself seen as a deeply ideological term. Ideological, because built into the cultural mode of analysis is the assumption that within any society there are common goals and values which all members share. What is sometimes excluded in this view of culture as ideology is the fact that, far from being universally agreed upon, definitions of reality are often a matter of fierce controversy and conflict. In other words, within social arenas, such as the workplace, there are competing and sometimes conflicting views about the nature of existing problems and their potential solutions. Reality thus becomes an artificial construct, the dominant interpretation of which becomes a function of the influence of the powerful. In these contexts, notions of culture de-value and de-legitimise alternative views and ideas. More than this, because the notion of a workplace safety culture tends to presuppose a unified system of values and ideas, it misdirects attention from the context of power within which the respective culture is embedded.

Some writers see culture as being expressed in terms of the (deep) core beliefs, values and assumptions of senior (and influential) individuals within the organisation (see Pauchant and Mitroff, 1992; Sabatier, 1987). Turner (1976; 1978) saw the importance of a cultural readjustment in the wake of disasters. He argued that organisations needed to be willing to absorb the lessons of failure (expressed in terms of a disastrous event) that could arise from both within and outside of the organisation.

This "failure of hindsight" (Turner, 1978) invariably proved to be a major factor in allowing organisations to incubate the potential for failure within their systems, protocols and modes of decision making. Effective organisational learning – a term also plagued by problems of definition – has been seen as a central element in developing an organisational culture that is constantly seeking to adapt to the risk of failure (see Toft and Reynolds, 1994; Smith and Elliott, 2000). Effective learning can de-stabilise the command dynamics of an organisation by calling into question the nature and acceptability of knowledge, beliefs and assumptions. Indeed, such a paradigmatic shift is essential in ensuring that organisations develop both a culture that is open to question and decision-making procedures that recognise the legitimacy of knowledge in its various forms.

To link back to our previous discussion of quantification and audit, the more critical view of culture being highlighted here entails the argument that the complexities of the modern workplace require *multiple* sources of auditing and safety assessment, one of which must be "safety auditing from below" (see Whyte, this volume). This is the internally generated critique of existing procedures by legally and organisationally empowered workgroups. Yet increasingly the language of safety management systems, quantitative risk assessment, human factors analysis, and safety cases, is exclusionary rather than inclusive. Safety culture, in its current operational usage, may therefore present dangers to the creation of safe working environments, whilst at the same time redefining the parameters of "workplace safety" in manner that makes a true detection of safety problems impossible.

Crucially, then, many notions of workplace safety culture obscure the recognition of the real-life underlying realities and tensions associated with power imbalances between employers and employees and their respective influence in a changing and uncertain work environment. Culture, used in its current managerialist form, is often little more than a manipulative tool for the control of actions and even the beliefs of the workforce. This volume illustrates some of the more positive versions in which a focus on safety cultures can and have become manifest in relation to risk management (Hopfl, Smith and Elliot this volume) - but we need to be clear that such contributions do not exhaust, indeed are relatively rare within, the discourses of corporate culture in general and safety culture in particular. This is one issue upon which post hoc case studies, demonstrating the nature and effects of cultural change within organisations, seem to us to be crucial. There is an urgent need to move beyond unreflexive - if motivated - exhortation.

Management

This volume, as with most discussions of risk, centres partly on the issue of management and its processes for dealing with hazards. A particular focus of many of the papers in this volume centres on the limitations of those processes. Such a critique of 'management' is important but only if it is measured and balanced. However, the term

management needs further exploration and discussion if this critique is itself to be effective. Perhaps the most fundamental question to be addressed in this context is how 'management' is to be defined, and more bluntly, who does, or should, 'manage' risk within that definition. This is more than a mere semantic issue as management processes (and, therefore, risk management) are predicated upon quite strict notions of control, effective information dissemination and (rational) decision making processes. Management has, however, proved to be a difficult term to define. This has been due principally to its abstract nature. For some management is closely associated with notions of organisation (see Fores, 1985), control (see Simons, 1995), learning (Senge, 1990) and the coordination of resources and there is little (if any) agreement on the absolute nature of the process. Kast and Rosenzweig (1985), for example, observe that,

> "Typical definitions suggest that management is a process of planning, organizing, and controlling activities. Some increase the number of sub-processes to include assembling resources and motivating; others reduce the scheme to include only planning and implementation. Still others cover the entire process with the concept of decision making, suggesting that decisions are the key output of managers" (p. 5).

Burgoyne (1985) outlines two distinct ways of looking at management:

> "On the one hand, managers organize resources external to themselves to get things done; whilst on the other hand the question of how, and how well they do it, is answered in terms of 'inner' psychological characteristics: knowledge, skills, attitudes, personality characteristics etc" (p. 47).

These personal characteristics are then brought to bear in the organising of resources and the people that utilise those resources It is these transactions, that exist at all levels of the organisation, which are an important aspect of the management which is seen as the creation of,

> "arrangements with these people, and maintaining these arrangements by continuous regeneration" (Burgoyne, 1985, p. 59).

This complex web of interactions creates difficulties for management due to those properties that can emerge out of them in ways unforeseen by those who designed the system. The process of management has been seen essentially as one of abstraction, it is the tasks of managers that give us insights into the process (Liliethal, 1967). Dörner (1989) points to the limitations of our knowledge and the false assumptions that we make within this process of emergence as being of central importance in the precipitation of failure.

In many cases, risk management seeks to emulate the broader actions of the management process. Management, in this case, can be considered to have four basic

elements – an objective-driven approach, which is achieved through people, using established techniques and set within an organization and its boundaries (Kast and Rosenzweig, 1985). This approach, when applied to risk management, suffers from severe limitations, rendering the extent to which risk can be effectively managed highly problematic. Amongst these are: a faith in technocratic expertise, and concomitant assumptions concerning the irrationality of 'non-expert' groups; a penchant for avoiding interference, with the effect that risk is always a secondary issue, to be attended to for essentially negative reasons; assumptions, as with many claims around 'culture', that there exists some kind of unitary interest within business organisations which can be pulled unproblematically into one direction. In short, these assumptions, these elements, are unlikely to be conducive to the rooting out of 'pathogens', to the questioning of core assumptions, to the genuine recognition of the legitimacy of views contrary to those that dominate within certain cultures or ways of seeing the world. That is, within this approach to, or definition of, management, dominant organisational paradigms are likely to survive, relatively unchallenged, and thus the maintenance and reproduction of risk-producing organisations is ensured.

Lest it be thought that these attributes of management have been consigned to the dustbin of Taylorist or Fordist history, it is worth noting that some of the more recent trends in management thinking and practice share essentially similar assumptions; and, indeed, in some respects, they are more pernicious for their very claims of being 'softer' or more enlightened forms of management. Thus, for example, many contemporary approaches to risk management have linked effective risk management systems closely to the provision of Human Resource Management (HRM), and to quality or total quality management. These links are questionable for several reasons. HRM practices, on the whole, have introduced a tendency towards the more effective disciplining of, and control over, labour. Moreover, there is evidence that labour management practices characterised by the term HRM - or at least the "hard" and increasingly dominant versions of this - are symbiotically related to attempts at deregulation. Such deregulatory initiatives include, the removal of employment protection in general, as well as attacks on health and safety regulation in particular. Reduced worker autonomy, the intensification of work, and the increasing commodification of labour, cast within an image of consensual workplace relations and by-passing existent trades union structures, provides a troubled background for an effective health and safety system (on these points, and for a more general critical treatment of HRM, see Legge, 1995, Townley, 1994).

Notwithstanding these regressive developments in management theorising and practice, it remains possible - as Smallman, Hopfl and Whyte detail in their contributions to this volume - that alternative, more democratic, approaches to management in general, and risk management in particular, can be conceptualised. In brief, a more democratic form of management opens up the possibilities of wide scale participation and of a genuine dialogue within organizational cultures where communication and disagreement are encouraged and required. It seems to us that these are also amongst the key requirements or elements of effective organisationally based

risk management. To give just one beneficial instance of such an approach to risk management, this is one means by which many of the problems of misinformation (see, for example, Turner, 1976; 1978; Smith, 1995; Wilson and Smith, Smallman, Whyte, and Beck and Woolfson, in this volume) might be eradicated, at least potentially. There are, of course some predictable objections to such a view of the management process, and it is perhaps worth noting some of these here.

One objection is that democratic organisations are likely to be slow and cumbersome. This is seen as a major criticism in an age in which flexibility and responsiveness to markets and technological changes is called for. Whilst such a concern has some validity, recent evidence from organisational theory suggests that this need not be the case (Clegg, 1991: 220-233). Nevertheless, in relation to risk management, we accept that an investigation into the nature of democratic forms of organisation might conclude that such forms are inappropriate, especially when these risks are actually realised, that is, in the context of some crisis event. This does not, however, present any overwhelming objection to the significance of more democratic structures in organizational attempts to manage the production and incubation of latent forms of risks. In such cases, it can be argued that the more democratic forms of organization might go some way towards preventing such incubation in the first place by challenging the core assumptions held by senior managers (see Tombs and Smith, 1995).

A second likely objection is that democratic forms of 'management' are likely to be inefficient. More specifically, through bad, yet democratic, decisions they may actually generate further risks and potential crises. Again, this criticism must be accepted as a possibility, although two points are worth making in this respect. First, as the voluminous literature on risk indicates, the existing (and currently predominant) non-democratic corporate forms manage perfectly well to make bad decisions (or non-decisions), and thus generate risk-laden contexts. Indeed, since a key element of democratic forms of risk management is the widest possible sharing of, and deliberation over, information, knowledge and expertise, then on this level the potential for bad decisions seems to us to be reduced. The surfacing of core beliefs, values and assumptions and their subsequent challenge by organizational members and affected stakeholders, might go some way towards dealing with the potential for risk incubation (see Turner, 1976 1978). Secondly, arguments about the 'bad' outcomes of democratic decision-making structures usually make reference to the problems of participation on the part of the uneducated - and this is, of course, a central element of paternalism. Yet, again, as almost all studies of post-disaster corporations indicate, the knowledge required to prevent the production or realisation of risks was present either in or around the organisation prior to that disaster event. The problem is often that such information is either not properly communicated or those in positions of power choose to discount that knowledge on the grounds that it is somehow invalid. In other words, it is less the case that those critics who are currently excluded from decision-making in corporations do not 'possess' the 'necessary' knowledge to participate; rather, what counts as knowledge has been defined in such a way as to exclude their potential contributions and legitimacy. 'Knowledge' is a social construction rather than a phenomenon conforming to

definition, be altered.

Such brief considerations would seem to indicate that, far from being part of the solution to the control of risk, management may actually be a key source of the risk problem. This in turn indicates the need for some radical rethinking of what we mean by 'management', a task to which many of the papers in this volume make a contribution.

Risk Revisited

As this book demonstrates, the risks that present themselves to be 'managed' are incredibly diverse in nature. They range from industrial risks through the somewhat more esoteric science-technology risks associated with bio-technology and genetic engineering, to the truly global risks associated with climate change. Moreover, these risks may take forms that are either acute or chronic. Many of these risks are products of science-technology, others arise out of the organisation of social sub-systems, while perhaps most are a synergistic effect of socio-technical structures. Thus it is vital to bear in mind that most of these risks arise out of human decision making and managerial activities. Consequently, they are subject to intervention and thus prone to change by those very humans. Two questions emerge from this relationship which are of particular concern to our discussions here. One appears to be a quantitative question: are risks becoming more prevalent? The second poses itself largely as a qualitative question: are there emerging risks, which are different in form to those with which we have historically been faced?

Risk and the Quantitative Dimension

On the question of frequency, it is useful to turn to one area of industrial activity within which considerable and longstanding attention has been given to issues of risk, and within which one might expect the frequency and scale of incidents to be relatively well documented, namely the chemicals industries. Indeed, this is also an interesting context in which to consider the question of frequency, since there are some - notably Kharbanda and Stallworthy (1991) - who have made claims that the frequency of accidents is declining.

In contrast, however, Shrivastava (1992) has expressed concern over the increasing frequency of industrial accidents in the chemicals industries. In addition, an earlier study by Carson and Mumford (1979) documented an increasing incidence of major accidents in the UK during the period 1954-1979. While recognising the limited nature of their data set, the authors argue that a greater number of serious accidents (with multiple fatality potential) occurred in the period of study than in previous years (ibid.). The data presented by Carson and Mumford illustrates both a considerable rise in the number of such incidents as well as an increase in near fatal accidents.

The 1980s did little to alleviate public concern over major hazard risks. While perhaps the best known of such events, the accident at Bhopal was not the only catastrophic event of this decade. The accident at Mexico City in 1984, for example, resulted in over 500 deaths and it illustrates the considerable potential for such accidents that persists within industrialized societies (Chapman 1984; Pearce 1985). However, the accidents at Bhopal and Mexico City were not isolated incidents but represented the worst cases of what could be seen as an alarming trend. A survey commissioned by the US Environmental Protection Agency (EPA) revealed that between 1963-1988, there occurred seventeen potentially catastrophic releases of deadly chemicals in the US, in volumes and levels of toxicity, which exceeded that at Bhopal. While 'only' five people were killed in these incidents, this was seen on several occasions as being a result of 'sheer good luck' (New York Times, 30 April 1989). Moreover, all but two of these incidents occurred in the 1980s. In other words, they took place in the final third of this twenty five year period and at a time when one might have expected that safety standards had improved. A more recent survey by the US National Environmental Law Center found that almost 35,000 toxic chemical accidents occurred between 1988 and 1992 in the US. At least one in sixteen of these events caused immediate injuries, deaths or evacuations; furthermore, these accidents represented only a small proportion of near misses and they were concentrated in a relatively small number of densely populated US states (Chemistry & Industry, 3 October 1994, p. 796). King has recently examined accidental losses in the chemicals industries for the period 1958-1987, concluding both that not only is the magnitude of these losses increasing, but also that the recent record of the industry can be seen as "truly alarming" and one which "gives no room for complacency" (King 1990, p. 6).

Of course, none of this necessarily demonstrates that there is any greater risk associated with individual sites or plants. It may well be the case that such data obscures the fact that many people in the US and the UK, for example, are safer now than they were 100 years ago from chemical accidents. Whilst the frequency of initiating events may have increased quantitatively, and their nature altered qualitatively, improved regulation and systems defenses around those hazards has led to some reduction in the risk of catastrophic failure. We would certainly agree that in terms of major hazard regulations, such as those involving Notification of Installations Handling Hazardous Substances (NIHHS), the Control of Industrial Major Accident Hazard (CIMAH) and, more recently, COMAH, then the developments since 1974 have been progressive (if a long time coming). Nonetheless, we cannot assume that the chemical industries are now 'safe' and neither can we accept the usual corollary of such claims, namely that improving safety may have led to the possibility (and some might even argue the desirability) of a regulatory moratorium or the removal of particular 'regulatory burdens' (on this, see Smith and Tombs, 1995; Pearce and Tombs, 1998). There is still sufficient potential for harm inherent within the industry to justify continued vigilance and control. In addition, the processes of globalisation may have shifted the requirements of control and have led to the claim that hazard is being exported to

developing economies where regulatory frameworks may be less developed than USA or Europe (see, for example, Jones, 1988; Smith and Blowers, 1992; Weir, 1987).

The chemical industry provides us with a useful focus for any discussion of globailisation, since it raises a further dimension of the scale of risk - for this is one industry in which production is truly global. Consequently, one might expect that the risks associated with such production would be global too. The increasing incidence of chemicals accidents and near misses is a case in point. This data can only be understood in the context of the spectacular expansion - both in terms of the quantities of production as well as spatially - of the international chemical industries in the post 1945 period (Aftalion 1991; Vilain 1989). The global nature of production and its associated risks might also lead to the exploitation of any weaknesses in the regulatory regimes. The result might be that poor operational practices or hazardous activities would become 'exported' to those areas where weak controls were existed. Bhopal itself illustrated the international dimensions of hazard generation by multinational companies, representing one instance of the 'export of hazard' (Castleman 1979; Ives 1985; Smith and Blowers 1992; Smith and Sipika, 1993). Indeed, while the international dimensions of the chemical industry means that the export of hazard has long been possible, trends towards a 'liberalisation' of the international economy are likely to have increased the opportunity for, and attractiveness of, such a strategy for chemicals companies.

Moving beyond the case of the chemicals industries, what is clear is that the hazards that we face within modern societies are not always the most obvious or visible. There is little doubt that an industrial installation, which stores significant quantities of chemicals, is hazardous. In contrast, sports stadia, for example, have not been considered to be major sources of risk (accepting the obvious caveat regarding hooliganism). Despite this belief, 152 people died in just two events at sports stadia in the UK alone (see Elliott and Smith, 1993). The portfolio of hazard generating activities that societies face may be seen by many as increasing, and yet this comes at a time when developed societies have better health and social provision than at any other time in history. Herein lies the obvious paradox. The risks that we face are becoming more complex and, often, less visible. They involve the truly global hazards such as the greenhouse effect and the "unseen" hazards such as virus transmission and food related problems such as BSE. In such a complex environment, notions of risk and its associated management strategies have to assume a greater level of sophistication. An expression of this sophistication has involved a growing recognition of the importance of the qualitative dynamics of risk generation and management. What this work suggests is that there is considerable scope, in many industries, for managerial or latent error in incubating the potential for harm (see Turner, 1976; 1978; Reason, 1990; 1997; 2000; Smith, 1995). What is of interest here is the manner in which management itself can contribute to the catastrophic failure of systems.

Risk and the Qualitative Dimension

Failure within organizations can be a cumulative process in which subtle changes can delude those who attempt to control the system. Dörner (1989) describes this process through his observation that that,

> "Failure does not strike like a bolt from the blue; it develops gradually according to its own logic" (p. 10).

Dörner makes the point, and echoes the seminal work by Turner (1976; 1978), that the incubation of failure assumes a certain inevitability:

> "As we watch individuals attempt to solve problems, we will see that complicated situations seem to elicit habits of thought that set failure in motion from the beginning. From that point, the continuing complexity of the task and the growing apprehension of failure encourage methods of decision making that make failure even more likely and then inevitable" (Dörner, 1989, p. 10).

As systems become ever more complex and as technology and science operate at the boundaries of our knowledge, then such a potential for failure takes on a dynamic perspective. This point is developed further by Smith and McCloskey (this volume) who point to the central role of technical experts in both shaping modern techno-scientific crises an incubating their potential. Such concerns lie at the heart of the post-modernist critiques surrounding risk.

As we indicated earlier in this chapter, the past ten years have witnessed the emergence of a body of literature, originally developed within sociology, and which can be traced back to the work of the German social scientist Ulrich Beck, but more recently popularised by Giddens. The consequent 'risk society' thesis has become a common, and perhaps even the dominant, reference point in conceptualisations of risk across social sciences. Within this literature, risk is no longer treated as a marginal issue - indeed, Beck had originally identified the emergence of what he termed the Risk Society. For those working within this emerging tradition, risk is treated not simply as one aspect of contemporary social life, but as a central or defining characteristic of a reflexively modern social order (see, for example, Beck, 1992, Beck et al., 1994, Giddens, 1998). Some of the contributions to this volume discuss this thesis directly (Pearce and Tombs, Smallman), while almost all others bear upon some of its central aspects. At this point, we simply wish to raise some general problems with the thesis that we live in a society marked by qualitatively different forms of risk, to the extent that this is a different form of society *per se*.

One of the most striking things about the contemporary work on risk is that it has focused on risks to consumers, the public, various communities and so on, and barely at all on risks to producers or workers, and the mundane risks that they face in the process of production. This is in many respects a necessary, yet at the same time a revealing, omission. It is necessary because the risk society literature is organised around a claim that the risks faced in contemporary society are qualitatively new - and

this thesis depends upon an obscuring of long standing risks, such as those faced by workers. Clearly, workers who are dealing with new technologies are also exposed to these 'emergent' risks. Second, this is also necessary given the claim that risk is ubiquitous - and to focus on the workplace might privilege certain types of risks, and to recognise that for some groups of social actors, risks are both structured or organised into their experiences. Indeed such risks can be the object of struggle and may be organised out of those experiences - that is, on the basis of class politics. Here we find why this omission is revealing - for the risk society literature is one based upon an assumption that contemporary social orders are no longer organised around a fundamental cleavage in terms of class (see, for example, Giddens, 1998, and Beck's 1992 arguments for a new politics). Indeed, in the (necessary) myopia towards the class-based production, distribution and experience of risk which the risk society literature displays, some of the general problems with this area of work are exposed, and these are of importance in our general consideration of 'risk management and society'.

First, "risk" is used within such literature in an over abstracted sense. While it is important to theorise about risk, about the nature of a risk society and the shifts in the governance of risk (amongst others), these questions and considerations need to be rooted within, and indeed developed via, a consideration of specific risks in concrete circumstances. There is a point here of general importance regarding the appropriate levels of analysis and their integration, and it is one to which we return in the conclusion to this chapter. Second, as argued by Pearce and Tombs (this volume), this research contains a tendency towards an idealist understanding of scientific rationality. Missing from this work is any real analysis of power in general, or capital in particular (see Pearce and Tombs, this volume, for an extended consideration of this point). The third problem, and one that develops the argument made previously, the risk society literature fails to address the unequal distribution and experiences of risk. While there is an important truth to this observation regarding the ubiquitous nature of risk victimisation, two points of clarification must be made. There is an obvious sense to the claim that 'we' are all victims when we are speaking of environmental risk, for we are all exposed to the environment and we are all consumers, to greater or lesser extents. But it is perhaps less obvious why 'we' all experience victimisation in the case of other forms of risk. Indeed, beyond environmental risks, many risks seem to be highly discerning in terms of likely victims. Thus if financial risks have increased, as Smallman claims (this volume), then the distribution of these risks has had the effect of further impoverishing what he calls variously the 'dispossessed' or an 'underclass', while various elites have benefited enormously from financial instability (see also, and most famously, Hutton, 1995, for a development of such an argument). The second point of concern is that these considerations need further refinement. Thus while it is accurate, at one level, to point out that "we" are all, ultimately, victims of risk, it is crucial to be sensitive to the fact that speaking from societies driven by cleavages of class, gender, race and ethnicity, degrees of able-bodiedness, and age, then it is also non-sensical beyond a certain level of abstraction to speak of "we". This can be starkly illustrated with respect to the effects of environmental pollution, since environmental risks are frequently represented as the most ubiquitous of

all. Thus, according to one currently dominant trend in social thought, we are now living in an era characterised as a risk society, where risks are ubiquitous and cannot be escaped by anyone (Beck, 1992: 22, 53, Beck et al., 1994). On one level, this is accurate as an indication of the qualitative shifts in the nature of those risks introduced by chemical, nuclear, and bio-technologies. On the other hand, there is clear evidence that environmental risks are borne to a disproportionate extent by those experiencing the harshest effects of other forms of social and economic inequality. As Welsh has put it,

> "the idea that there are global risks which are 'somehow universal and unspecific' recognising none of the social categories which have stratified societies .. is only true at the level of rational abstraction used in global risk assessments" (Welsh, 1996: 20).

Thus one must at least take seriously the scepticism of Fagan, when he writes that, "the dynamics and dimensions of [the] risk society look remarkably similar to the class society" which risk theorists claim has been transcended (Fagan, 1997: 16). Thus there is now a significant body of evidence which points consistently to the unequal distribution of environmental risks in the United States, and in which there is agreement concerning the association between the class, racial and ethnic composition of geographical areas and the extent of any exposures to environmental pollutants (see Bryant and Mohai, 1992; Clark et al., 1995; US General Accounting Office, 1983; Gould, 1986; Steretsky and Lynch, 1997; Bullard, 1990; Hofrichter, 1993). Whilst it is clear that environmental risk is unequally distributed on a global scale (see, for example, Hofrichter, ed., 1993, Williams, ed., 1996), there is at present little work carried out within "environmental justice studies" in the UK, nor indeed in Western Europe. However, there is no reason to expect that the environmental effects in Europe do not reflect these other factors.

Similar observations regarding the unequal distribution of victimisation and risk might be made beyond the realm of environmental risks. For example, research on victimisation by consumers to risks associated with the products of pharmaceutical industry, clearly points to the particular victimisation that has historically been experienced by women. This gendered victimisation to risk follows from the construction of women as reproducers (see Draper, 1991), so that women are differentially victimised by the products of the pharmaceutical industry (Szockyi and Fox, 1996) or are excluded from working within certain types of hazardous environment (Draper, 1991). However, as Draper observes, "Fertile women are often excluded on the basis of insufficient, inconclusive scientific information" (Draper, 1991, p. 68). She goes on to observe that,

> "Many of the chemicals from which women are excluded can harm future children through male workers by way of sperm damage or mutagenic effects" (Draper, 1991, p. 69).

Of course, such exclusion is not only gender specific but also logically age discriminatory as well because only those women of reproductive age should be excluded from that particular workplace. Draper also observes that such exclusion is often sectorally biased,

with fertile women still being allowed to work in hazardous environments in such industries as health care, where they are the dominant employees in the workforce. Draper argues that,

> "Women are usually barred not from all jobs that entail toxic risks but only from the unskilled, relatively high-paying production jobs traditionally held by men" (Draper, 1991, p. 71).

But there are also class and ethnic dimensions that overlay these gendered aspects of victimisation. For example, Finlay notes that one of the reasons why DES victims were able to mobilise effectively was due to the "demographics" of the drug. DES was an expensive drug and one that was dispensed largely by private physicians, as opposed to those serving public hospitals or clinics:

> "Most of those who were exposed to DES are middle- or upper middle-class, white, well-educated women. The characteristics of the affected population, which came to be known as DES daughters, later contributed to their grassroots activism, pursuit of medical information, and inclination to file a large number of lawsuits. The injured women had the education to do research and become involved in their own medical treatment; and they are form a racial and economic group that tends to regard legislatures and courts not with alienation and distrust but with the expectation that they will produce justice" (Finlay, 1996: 67-8).

This work on the crimes of the pharmaceutical industry thus documents the extent to which women experience victimisation both as producers and consumers of unsafe "medical" or cosmetic products. In addition, they are also victimised in the labour market and within workplaces through a range of illegal exclusionary and discriminatory practices (Draper, 1991; Finlay, 1996). Indeed, while women work in sectors that are increasingly being recognised as particularly unsafe and unhealthy, representations of the hazard have traditionally been associated with male occupations. Despite the fact that research, largely conducted by men, has mostly ignored womens' occupational health and safety issues (Szockyi and Frank, 1996: 17), trends in data indicates that those areas in which women are over-represented, notably services, are those which exhibit both persistently high, and rising, rates of injuries and ill-health (see Craig, 1981, Labour Research Department, 1996).

More generally, where workers are exposed to risks against their health and safety, these are most likely to be those in poorest protected and most poorly paid occupations rather than those working in "inherently" dangerous occupations. This point has also been made by Carson and, more recently, by Woolfson and colleagues in relation to the UK offshore oil industry (which has drawn upon labour from the unemployment "blackspots" of Scotland and Northern England). That there are gender and ethnic, as well as class, dimensions to this unequal victimisation is also evidenced in the work of John

Wrench (Wrench, 1996, Lee and Wrench, 1980, Wrench and Lee, 1982; see also Boris and Pruegl, eds., 1996). Understanding the victimisation of groups around risk, and the differential responses made to, and public knowledge of, such victimisation, thus requires an understanding of various forms of class-race-gender articulations.

In short, therefore the risk literature within the Beck paradigm fails to provide the basis of any political economy of risk (Fagan, 1998: 7; Woolfson, this volume) and is one of a number of social-scientific trends which treat individuals in an abstracted sense, rather than in their real contexts, as women, workers, members of an ethnic grouping, and so on. Thus, as Fagan has noted, social scientific analysis

> "should at least illuminate and make comprehensible the details of individuals' lives in the context of changes that are taking place on a wider - even global - scale. The new risk discourse addresses this global aspect, but fails to relate it to the lives of individuals" (Fagan, 1998, p. 16).

By seeking to address risks at various levels (the individual, organisational, institutional and social), by exploring issues of risks within a variety of sectoral contexts, and by seeking to combine empirical and theoretical considerations, this volume seeks to avoid such abstraction, and in this way, following Fagan, to add greater substance to contemporary risk debates.

Conclusions

The papers collected in this volume speak to risk management from a variety of disciplines and from a range of political and theoretical perspectives. Taken together, they emphasise both the range of work contributing to risk management, and the significant areas of difference, even tensions, that exist within this body of literature. Indeed, if this volume achieves anything, it demonstrates that 'risk management' is not an easily identifiable, homogenous, nor closed area of academic and practitioner activity. There are at least two reasons for this diversity and openness. One is simply the range of problems and issues that are encapsulated within the umbrella term 'risk management' - thus the 'management' of these issues defies any reducibility to a standard recipe, or protocol for success. Second, as a sub-disciplinary area of intellectual endeavour, risk management is dependent, and some would even say parasitic upon, a series of other disciplines. Thus chapters in this volume draw upon business and management studies, criminology, industrial relations, insurance economics, political science, psychology, and sociology. This broad disciplinary base is a potential strength of the work, not least given the fact that genuine multi-disciplinarity is a rare, but powerful, aspect of academic endeavor. At the same time, however, such a multi-disciplinary approach is also a source of potential weakness, since at best it creates the danger of epistemological, theoretical and even political eclecticism. At worst, it can generate an internal paradigm incommensurability, removing the possibility of different contributors to the field from being able to engage

in any meaningful dialogue, and thus progress. It is our view, however, that while there are inevitably problems generated by difference and openness, and that these must be recognised, this diversity should be treated as fruitful, and thus welcome. Moreover, in practical terms, if the issues and problems captured by the increasingly familiar term 'risk' are to be addressed successfully than a plethora of approaches, forcefully and rigorously debated, is required.

The contributions to this volume do at least provide, when taken together, a set of parameters within which a working definition of risk management can be gathered - though there remains much about the details of this definition to be debated and, potentially, resolved. For our the purposes of our current discussion, the papers in this collection have generally followed the definition developed by Nedved which defined risk management as

> "the set of ongoing management and engineering activities of a business that ensures that risks are effectively identified, understood, and minimised to a reasonable achievable and tolerable level. The activities include feedback mechanisms and continuing performance monitoring" (Nedved, 1998, p. 1).

Such a definition requires, of course, that it is developed through adding greater specificity to particular terms. Thus, we need to know what constitutes the process of management in general and especially risk management (it could be argued that all management is concerned with the management of risk). One might ask here what role is there or should there be for those outside those 'businesses' who bear the consequences of those risks? A further question concerns the role of the various techniques that are available for risk management. Of particular interest here is the question of how robust these techniques are and upon what assumptions are they based? Ultimately, there is an important question to be asked concerning the relationships that do and should exist between the organisational and the technical. What is the role of the technical expert as a mediator between risk generators and victims and how valid is that expertise under conditions of emergence? These issues provide further clarification of the definition of risk management that is set out in Nedved's definition and the remainder of this volume will seek to explore them in more detail.

NOTES

[1] Parts of this section draw upon work conducted by Charles Woolfson (see, for example, Woolfson and Beck, 1999, Woolfson et al., 1996), and one joint project on which Steve Tombs collaborated with him (see James and Walters, eds., 1999, chapter 2).

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