THE RISE OF RISK

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Suddenly, everyone seems to be talking about risk.[1] If Raymond Williams were still alive and minded to update his classic account of the culture's 'keywords' (Williams 1983), the word 'risk' would top his list of new inclusions. The idea of risk has come to appear indispensable for understanding our times. As Anthony Giddens (2000: 39) puts it, 'this apparently simple notion unlocks some of the most basic characteristics of the world in which we now live.' Yet only ten or fifteen years ago, 'risk' had barely a marginal place in the vocabularies of social thought or cultural commentary and was rarely discussed outside of scientific journals and managerial reports

Today's accounts of risk are remarkable for their multiplicity and for the variety of senses they give to the term. Risk is a calculation. Risk is a commodity. Risk is a capital. Risk is a technique of government. Risk is objective and scientifically knowable. Risk is subjective and socially constructed. Risk is a problem, a threat, a source of insecurity. Risk is a pleasure, a thrill, a source of profit and freedom. Risk is the means whereby we colonize and control the future. 'Risk society' is our late modern world spinning out of control.

Whatever one makes of these claims, it seems clear that risk and its management have outgrown the domain of the technical specialists and are becoming increasingly pervasive features of the contemporary world. Risk continues to be a major focus of scientific, economic and managerial concern but it is also now the subject of a whole variety of cultural, historical and political inquiries, as well as being a prominent theme of the social theories we generate to interpret our world. In this introductory chapter I aim to do three things: (i) clarify the terms of discussion; (ii) speculate about why so many intellectual and political currents nowadays converge around the idea of risk; and (iii) discuss the most

influential account of the place of 'risk' in modern society – Ulrich's Beck's "risk society" thesis.

Risks and dangers

'Risk' is a word with a range of different meanings. In everyday usage it refers to 'the possibility of loss, injury, disadvantage or destruction' (Webster's 1971). Sometimes we characterize persons or things as 'risks' when they are prone to create hazards, or as being 'at risk' when they are more than usually vulnerable to being adversely affected by some problem or danger. We also use the word in its active verb form to mean 'to expose to hazard or danger,' a usage that reminds us that we sometimes engage rather than evade the dangers in the world around us. As well as these standard usages, the word has come to have various more technical meanings, in probability theory, in insurance contracts, in risk management manuals and, at least since Beck's Risk Society (1992), in sociological theory.

In colloquial use, and even in theoretical texts (see Beck 1992 and Douglas 1992: 28) 'risk' and 'danger' are sometimes taken to be the same thing, but it is helpful to distinguish the two terms and clarify their distinct meanings. A *danger* is a 'contingent evil' (Webster's), something that is liable to cause harm, injury or adversity of some kind. A *risk* is the *possibility* of some such loss or injury. Risk is a measure of *exposure* to danger, of the *likelihood* and the *extent* of loss. So the ideas of risk and danger are closely connected, but clearly distinguishable. 'Danger' is the potential for harm that inheres in a thing, a person or a situation. Risk is a measure of that potential's likelihood and extent. Put at its simplest, risks are estimates of the likely impact of dangers.

Risks, dangers, and our relation to them

Neither risks nor dangers are simply brute facts in nature to which we have given a proper name, despite our tendency to talk about 'natural hazards' such as floods and lightning. In their central sense, both risk and danger have *relational* meanings. Each term defines a perceived relationship between our world and ourselves. Each involves a vision of what might happen and how it might affect us.

There are countless things in our environment that have the potential to do harm, cause damage, or bring about economic loss. Meteorites and volcanoes, toxic emissions and speeding cars, market crashes and urban riots, sex offenders and abusive parents, collapsing demand and overheating economies, undernourishment and overweight are familiar examples. Some of these things are generated by human activity and are amenable to social control. Some are not, or at least not yet. Whether 'man-made' or 'natural' (a distinction that is increasingly hard to sustain) most of these things exist in the world, and continue to do so whether or not we worry about them. They take on the quality of being 'hazards' or 'dangers' only when they relate to us in ways that might adversely affect us or our interests. Dangers are *dangers for someone* – for specific individuals or groups or species, under certain conditions – nothing is dangerous as such, not even floods and lightning. On the other hand, anything and everything has the potential to become a danger to something or someone. All that is required is that there are interests or values that the thing may adversely affect.

The balance between humanly produced hazards and naturally occurring ones has shifted towards the former, as our capacity to act upon the world (and upon each other) has increased from the industrial revolution to the present day. A potential for unwanted side effects and dangerous repercussions is a byproduct of the extended scope and increased interdependency of human action. The increase in our powers and technological capability brings with it new possibilities for the

misuse or faulty deployment of that increased power. Increases in the range of human actions, investments and interests will tend to increase our exposure to loss, harm and hazard. Efforts to combat dangers, reduce our exposure, or remedy harmful externalities have tended to trail behind technological and economic innovation. Today we seek to 'design in' safety features that anticipate risk, but for much of human history, damage limitation has been retrofitted after the fact.

Risks and uncertainty.

Potentially dangerous things become 'risks' only when we assess the likelihood that these adverse effects will indeed occur and weigh the harms that they are liable to bring about. Risks are not 'material' things in the old 19th century sense of that term. Risks are estimations of possible events. Unlike dangers or hazards, risks never exist outside of our knowledge of them. They are the product of future-oriented human calculations – assessments made by people in the face of an uncertain world and the possibilities that it holds for them.

Risk always exists in the context of uncertainty. Where there is certainty about an event, where we know for certain that it will or will not occur, we do not talk of risks. Risk begins where certain knowledge ends. Claims about risk are, literally, uncertain knowledge claims – impressionistic guesses, informed estimates and probabilistic predictions about a future that cannot be fully known.

In an important sense then, a risk is not a first order 'thing' existing in the world. It is rather a *specific way of assessing and categorizing the (hazardous) relationship that these things have to us, to our plans, our interests and our well being.* The number of risks that exist at any time is a function of the number of risk identifications and assessments that human beings make. (Dangers are a different matter.) If we are becoming a 'risk society' as Beck (1992) and others have claimed, then this is, in an important sense, a development for which we (or some of us) are directly and actively responsible. If our orientation towards life's

dangers were suddenly to shift from active concern to fatalistic acceptance, our world would be no less hazardous but the risk society would disappear.

The idea of an unforeseen hazard makes sense, at least in retrospect – there may be dangers around the corner of which we are unaware, and familiar phenomena may turn out to have a currently unknown potential to do us harm. But there is no such thing as an unforeseen risk, since, properly speaking, something becomes a 'risk' only to the extent that its potential for adverse consequences has been brought to notice and subjected to some kind of estimation, however rough and ready. One might go further, as Adams does, and say that there is no such thing as an *unmanaged* risk, because as soon as a risk is identified, as soon as it is noticed, we tend to take steps to manage or reduce its adverse consequences. '[R]isk perceived is risk acted upon. It changes in the twinkling of an eye as the eye lights upon it' (Adams 1995: p. 30).

Risk, risk perception, and risk management are thus interdependent, interactive, and mutually constituting. This mutuality should be reassuring. The modern world may be crammed full of risks and dangers, but it is also populated by practices and institutions designed to identify and manage risks, reduce uncertainty, and cope with danger.

Risks are conditional

Risks are relationships of possible adversity, calculated and assessed by someone for some specific purpose using some specific means. The idea of a risk is therefore thoroughly *conditional.* A risk is always a risk of something, for someone, estimated for a certain exposure (specified in terms of time, intensity or amount), and calculated using specific units and instruments of measurement. 'Risks' are stated measures of possible hazard, usually expressed in some basic metric such as monetary values or fatality rates. Such measures are calculated by multiplying the probability of the adverse event by the amount of the loss that

such an event would entail. Put simply, risk is 'the product of the amount that may be lost and the probability of losing it' (Webster's).

Measurements of risk can be more or less accurate, more or less valid, more or less scientific. That risks are conditional does not detract from the possibility of accurate measurement within defined parameters. The important practical question is whether they are well or badly constructed as estimates of the event in question.

That they are 'socially constructed' should be obvious, though quite how this social construction works is a central topic of sociological, economic and psychological research. As Mary Douglas and her colleagues have shown, the risks that we identify 'out there' reveal as much about us – about our psychological traits, our cultural biases, our structures of perception, and our institutional affiliations – as they do about the hazards and contingencies in our environment.

Risks are reactive

Our capacity to identify, evaluate and manage uncertain future events is intrinsically limited; even where there is good data, good science and a settled perception of the hazard in question. Past experience is our best predictor of future events, especially when that experience can be understood, quantified, and statistically analyzed. But even at its best the past is an unreliable guide. Extrapolations from past experience are always inferences from a limited data set using premises (about cause and effect, about the factors involved, about *ceteris paribus*) that may be shaken by subsequent events. And if this is true of 'natural hazards' - such as meteorites, volcanoes and earthquakes - that are largely unresponsive to human action, it is truer still when the hazard in question is 'conduct-related', or somehow affected by human behaviour.

Many of the conduct-related risks that we seek to manage – fire and financial loss, crime and cancer, early death and late delivery – are altered as soon as we identify them as such. Research on skin cancer prevalence and etiology changes our sunbathing patterns and so alters rates and risks. Reports that crime is rife in a particular neighbourhood prompt law-abiding people to stay away and thus increase the risks of victimization for those who remain. Householders who worry about burglary become more vigilant and thus reduce the risk that they worry about. In all these cases, risk is 'reactive' (Heimer 1985) – it responds to the attitudes and actions that people adopt towards it.

Risks are continually calculated and compensated

If the worried householders decide to take out insurance, preferring to pay a small regular premium rather than run the risk of a large uncompensated loss, they may relax their former vigilance and increase the risk to its previous level. Insurers refer to this phenomenon as 'moral hazard' and seek to combat it by imposing minimum care requirements in order to reduce its effects. 'Moral hazard' describes the temptations to bad behaviour (false claims, carelessness, willful damage, etc.) that the promise of compensation can produce for an insured party. But the underlying phenomenon to which this points is the tendency of actors continually to weigh up the costs and benefits of their situation and behave accordingly.

This tendency to adjust behaviour in response to changing perceptions of risk is usually called 'risk compensation.' Safety officials may strive to reduce risks towards zero, but most individuals find a level of risk with which they are comfortable and stick to it, even as their environment changes. As a result, measures intended to create safer roads may be offset by the increased recklessness of drivers who now feel less at risk. Airlines are one of the 'safest' forms of transport, but a moment's reflection reveals that this is because of the

meticulous standards of care that have been put in place, not the absence of danger involved in flying through the air at 30,000 feet. Risk compensation means that as perceived risks alter, so too do our levels of vigilance and exposure. The dynamically interactive process that results often confounds attempts to measure risk or to increase safety.

Risks are interactive

If it is true that actors perform a kind of balancing act as they adjust their conduct in response to the changing hazards in their environment, it is equally true that individuals differ in respect of where they set that balance. Each of us has our own 'risk thermostat' (Adams 1991) - our own comfort level in the face of particular risks and particular kinds of risks. Individuals vary in their propensity to take risks – whether as result of personal dispositions, cultural bias, past experience, or available sources of security – and so do institutions. Some of us are cautiously risk averse, others are reckless risk takers, and we necessarily act in the company of others whose behaviour we don't control. Drive on a rush-hour highway and you'll get the idea. Unless they are on a desert island, individuals and institutions are usually responding to hazards in company with other individuals and institutions whose collective decisions and conduct will affect the risk that any one of them will face.

The risks we run depend on the actions of others and the risks they take. It is this complex interaction between multiple, reflexive actors and particular reactive risks, that John Adams has in mind when he offers the image of 'the dance of the risk thermostats'. Game theory puts the same point more prosaically when it says that 'the true source of uncertainty lies in the intentions of others.' (Bernstein 1996: 232). Risk is, in short, profoundly interactive, which is to say, profoundly social. The old natural science idea of 'objectively' measuring 'actual'

risks is increasingly being redefined by a more complex, more social, understanding of the processes involved (Royal Society 1992).

'Objective risk' and perceived risk

When people talk of 'objective risk' they mean a risk that has been scientifically established using the best available data and knowledge, as opposed to 'perceived risk' that is based upon merely 'subjective' impressions. Authorities often respond to public anxiety by seeking to ascertain the 'objective' or 'actual' risk of a particular hazard and using this measure in attempts to persuade citizens to alter their attitudes. The space between expert-defined measures of 'objective risk' and the public's 'subjective' impressions is a problematic one, particularly if the conduct of governments or members of the public bears upon the risk in question. Debates about 'actual risk' and its implications for action are a recurring theme – perhaps the central theme – of contemporary politics.

Whether we accept the idea of 'objective' risk and risk measurements depends on whether we think there are any conventions of categorizing and counting that are sufficiently well-established, widespread and uncontested to deserve that name. But even when strong conventions do exist, the notion of 'objectivity' tends to cloud rather than clarify the issues at stake. Like all measurements, risk assessments depend for their validity upon a prior system of categorizations and metrics, which are, in turn, grounded in specific conventions, or institutions, or ways of life. Objective versus subjective risk is a false opposition. The contrast is more often between different conventions for observation, measurement and evaluation. As Fischhoff says 'what is commonly called the conflict between actual and perceived risk is better thought of as the conflict between two sets of risk perceptions: those of ranking scientists performing within their field of expertise and those of everybody else' (Quoted in Royal Society 1992: 97. See also Pildes and Sunstein 1995).

Because risk statements carry consequences, the representation of risk is subject to political manipulation and tendentious presentation. The background condition of uncertainty, limited knowledge, and differential evaluation often makes it impossible to separate out 'factual' claims from politically loaded perceptions. When risks are politically contentious, it's often interpretation all the way down.[2]

Risk and public perception

Governments and scientists have learned that the risk perceptions of ordinary people are not easily transformed by reference to 'objective' measures of the risk in question. Subjective impressions can be strong, scientific claims may be regarded with skepticism, and individuals often place greater trust in their own experience, or that of friends and neighbours, than in the claims of government experts. More importantly, any assessment of risk entails an assessment of consequences as well as of likelihood. People who worry about becoming victims of crime, or cancer, or nuclear fall-out, are expressing personal views about the event's (dis)utility as well as its probability. They are making emotionally laden value judgments as well as cognitive claims. And while scientific evidence may counter misleading estimates of the likelihood of an event, it can do little to change public views about the undesirability of its occurrence.

Democratic governments have learned that they must listen to public concerns of this kind, rather than brush them aside as 'uninformed', 'irrational' and 'unscientific'. As the Royal Society Report (1992: 91) states, 'the public's viewpoint must be considered not as error but as an essential datum.' Or, as Beck (1992: 77) puts it, 'If people experience risks as real they are real in their consequences.' The challenge for democratic politics is to create the conditions for informed debates and decision-making in which citizens as well as specialists can participate effectively. (On this, see Pildes and Sunstein 1995.)

Risk communication

Governments and corporations are learning that risk communication is itself a risky business, prone to producing counter-productive effects and unintended consequences (Nelkin 1984). Efforts to inform the public about the estimated risks associated with identified hazards must be carefully judged to avoid alarmism on one hand and complacency on the other. Hazardous situations are made worse by official advice that is poorly judged or misunderstood, so there is an understandable reluctance to 'go public' when potential risks are first identified. But public officials are under great pressure to provide full and accurate information as soon as possible, and will be held to account if they fail to do so. Hence the modern predicament – authorities must disclose the facts, clearly and comprehensively, even when they are themselves unsure of what these facts are. The difficulty of making critical decisions in conditions of uncertainty is thus exacerbated by the difficulties of representing these uncertainties to the public, particularly a public untutored in the interpretation of risk measures and unrealistic about the character of scientific knowledge.[3]

Research suggests that there are systematic biases in the public's perceptions of risks, with most people being prone to overestimate the risk of low frequency, high magnitude events (catastrophes such as nuclear explosions or airplane disasters) and underestimate the risk of high frequency, low magnitude events (routine accidents in the home, road accidents, etc) (Royal Society 1992). Such biases ensure that expert rationality and public preferences often fail to coincide.

Perhaps the most basic problem today, however, is the problem of trust, and the public's relation to 'the authorities'. Sections of the public have come to distrust government officials and large scale organizations, believing that their interests and motives do not match their own. Similarly, the claims of 'scientific experts' are often regarded with some skepticism, particularly if other experts

offer competing advice. Whether this new distrust is because of unrealistic expectations on the part of the public, the poor safety records of some organizations, the publicity nowadays accorded to disasters or safety threats – or, as I will discuss later, because of underlying changes in social organization – the result is that government officials and scientific experts can no longer take it for granted that their advice will be regarded as authoritative.

Risk experts and institutions

Risk assessment and risk management are activities that all mature human beings constantly undertake in their daily lives, often without much conscious reflection. We all use know-how and information (of varying quality) to address the hazards that confront us – sometimes trying to steer safely around them, sometimes engaging with them for pleasure and profit, most often trying to balance risks against rewards and trade off the effectiveness of precautions against the effort of taking them. Common-sense knowledge about how to handle risk draws upon all sorts of superstitions, practical recipes and folk-wisdom but in modern societies it also relies heavily upon experts, scientific knowledge, and risk-managing institutions specially designed for this purpose.

This relationship between lay actors and scientific expertise is a central characteristic of modern society, where expert opinion on topics such as diet, health, relationships, finance and investment quickly filter down into public consciousness and the daily routines of individuals (Giddens 1991). The immediacy of this relationship between lay and expert knowledge, and the extent to which daily conduct is now governed by reflexive knowledge rather than habit and tradition, has ensured that science is now in the public view much more than was previously the case – often with negative consequences for the credibility of scientific expertise.

The government of risk

The question of who is responsible for regulating risk is a fundamental and recurring one. Should governments be responsible for the safety of their citizens and for managing the risks that regularly affect them? Should individuals manage their own risks wherever possible, relying upon private insurance, tort law and simple prudence? And what about corporations? Should they be legally obliged to ensure the safety of their employees, customers and stakeholders? Or is the market an adequate mechanism for delivering the levels of safety and quality that consumers prefer? If government regulation is required, what kind of regulatory regime is most appropriate? These questions frame many of today's political and legal issues, ranging from environmental policy and pollution control to employment law and welfare state benefits.

In practice, responsibility for risk management is parceled out between individuals, corporations and government agencies, with the particular distribution of responsibilities being a rough indicator of the political and economic structure of the society in question. In more welfarist societies, the state tends to act as the general risk-manager, governing risk by means of extensive regulation, standard-setting and inspection, and operating as an insurer of last resort for otherwise uncompensated losses. In more market-oriented societies, individuals bear more of the burden of risk management, relying upon private insurance or private litigation to compensate losses caused by the actions of others.

The long-term historical trend in modern societies is for governments to become ever more responsible for risk management, governing risks by means of statutory regulation, legal norms and standards, compulsory insurance, and the provision of benefits to those in need. Risk management – usually known by some other name – has always been a basic function of government, if by this one means the securing of internal peace, law and order, and defense against foreign

invasion. And at least since the early modern period, the 'police powers' of the state have extended to rudimentary sanitation, containing epidemics, controlling idle workers, and regulating weights and measures. But in modern states, of whatever stripe, the expert management of risk has become an essential task of government that reaches into practically every domain: from the regulation of food and drugs to manufacturing standards; from health and safety at work to environmental regulation; from social insurance and economic policy to the legal norms of tort and civil liability. By means of their actions and inactions, governments everywhere allocate risks, distribute dangers and place costs, in particular political configurations. But the long-term trend has been for governments to do more and more of the job of risk management themselves.

Freedom, security and insurance

Ever since the end of the 19th century, insurance in its various forms has become an important element of social and economic policy. Governments have used its techniques to secure citizens against social and economic risks, to reduce social conflict and to enhance economic performance.[4] These insurance arrangements – which include workers compensation, old age pensions, unemployment insurance, family allowances, and so on – illustrate what Michel Foucault (1991) means when he talks of the importance of 'apparatuses of security' for the 'liberal' mode of government. Insurance is an important tool of government in modern, liberal societies because it preserves the free play of autonomous action within the economic and social spheres (allowing individual decisions about work, marriage, childbearing, purchase and sale, investment, etc.) while adding a safety net that removes some of the risks associated with these freedoms. Thanks to the operation of statistical laws and probabilities, populations can be governed through insurance in a way that leaves scope for individual

freedom but ensures a level of security and stability for the whole (Hacking 1990).

This need for mechanisms of security to underpin the exercise of freedom is also apparent in the build-up of regulatory law that has occurred over the same period. The historical forces that have produced this risk-governing state are many and various but a major reason is the need to generate trust and confidence in everyday processes and products that are increasingly beyond the control and understanding of their users (Giddens 1990; 1991). Our willingness to drink the water in our taps, to swallow prescribed medications, to board transatlantic airplanes, or to allow the citing of a nuclear reactor in our region, depends upon our being confident that the systems that deliver these products are properly regulated and meet acceptable safety standards. Governmental authorities seek to provide a basis for such trust by generating a framework of regulation and inspection intended to ensure that health and safety standards are met. Where these regulatory schemes work well, they allow us to take routine risks without pausing to think about them, thus greatly facilitating the flow of social and economic life.

The welfare state and risk management

The modern state is a welfare state, a regulatory state, an insurance state. It insures its citizens, indemnifies them against losses, regulates economic risks and environmental dangers, protects individuals from social harm and economic disaster. Its basic tools are those classic techniques of risk-management: statistical enumeration, insurance, discipline, regulation, standardization, norm setting and inspection. Most of its specialist agencies - in social work, criminal justice, mental health, environmental health - have as their primary function the management and reduction of particular kinds of risk.

Alongside these statutory agencies and regulatory frameworks, a system of consumer law, tort law and product liability law has emerged that functions not just to find fault and allocate blame but also to distribute risk in patterns that are efficient as well as fair (Priest 1990; Lowi 1990).[5] Behind this new distribution of social liability for harms are new conceptions of responsibility, new relations between social groups, and new techniques of insurance, all of which converged at the end of the 19th century to produce a distinctively 'social' mode of managing risk and promoting solidarity (Donzelot 1979; Ewald 1991).

Social and economic historians have debated about the social basis of the welfare state, with some pointing to the working classes as the key actors and others identifying the needs of capital and a more top-down process of change. But the comparative evidence does not fully support either of these standard interpretations. As the work of Baldwin (1990) and Rosanvillon (2000) suggests, thinking of the welfare state as a *risk-management state* shifts our attention away from conflicts over the means of production and towards conflicts over the means of security. In this analysis, the key historical actors are not so much social classes as *risk categories* - social groups defined by their relationship to a particular policy such as social security, or old age pensions, or health care – and the social policies that came to be established in different nations were the ones that worked to serve the interests of the most powerful risk groupings. The contrast between support for old age pension schemes (for which all adults are 'at risk') and support for income support schemes (which benefit only the most needy) demonstrates the power of risk-defined interests to shape political behaviour. Thinking about the risk categories that are brought into being by a particular proposal – rather than about the supposed interests of pre-given social classes – has the potential to change how social reformers approach the politics of transforming welfare provision.

'Neo-liberalism' and the re-allocation of risk

Over the last two decades, neo-liberal governments have sought to move away from the classic post-war model of the risk-managing state (Yergin and Stanislaw 1998). Arguing that the insurance state gives rise to its own version of moral hazard – the 'culture of dependency', the erosion of individual responsibility, the decline of the entrepreneurial spirit, a 'no-risk society' (Aharoni 1981) – they have deregulated markets and financial institutions, emphasized free enterprise, and taken steps to shift risk and responsibility onto individuals (Rose 1996).[6] This return to the market is driven, in part at least, by highly paid sections of the population for whom state-provided benefits (such as pensions, education, healthcare, and income support) are no longer essential and no longer adequate. In effect, certain demographic groups have calculated that they stand to gain little from the welfare state's insurance schemes, and now prefer to pay reduced taxes and take their chances in the private market. They perceive themselves as risk categories for whom state insurance demands premiums that are too high and offers benefits that are too low, so they look to private insurance and investment as more effective ways of managing their risk (Rosanvillon 2000). Under the banner of market freedom and individual responsibility, the better risks depart the state insurance schemes, leaving an impoverished collective fund to deal with their more vulnerable, higher risk fellow citizens. Ulrich Beck (1992) stresses the importance of environmental risk in contemporary politics and claims that the economic conflicts associated with 'industrial society' have tended to fade. In fact it seems clear that debates about economic risk and its management still stand center-stage.

Risk and morality

When we talk of 'risk-management' as a mode of governance, we are generally referring to a distinctive form of practical morality that is quite at odds

with traditional forms of moral and judicial reasoning. Instead of going in for post hoc blame allocation and holding the individual actor fully responsible, a risk management approach tends towards a more structural account of responsibility and is less concerned with fixing blame or imposing penalties. Loss prevention, harm reduction, and efficient compensation are, in many circumstances, more easily achieved by co-operative action and shared responsibility than by individualistic moral codes. One sees this in modern civil law (and especially products liability) where there has been a historical shift from fault to risk, from blame-worthy individuals to risk-spreading corporations (Priest 1990; Lowi 1990).[7] And while some critics see this as the abolition of responsibility, it is, in reality, an attempt to create a more complex, more social, imposition of duties and responsibilities – one that is perhaps more appropriate for a complex social system.

The language of risk might be thought of as the emergent moral discourse of an interdependent differentiated society. It is the liberal harm principle raised to a new social level. The imperative to 'do no harm' now takes on a more social, more complex aspect, since our actions typically affect so many more people. As chains of interdependence grow longer, and shared moral codes grow thinner, risk management has become a necessary moral technology, operationalizing liberalism's twin concern to maximize freedom of action and to reduce that freedom's harmful consequences.

Institutional orientations to risk

Psychological research has developed tools to measure the risk propensity of individuals, and the factors that affect these propensities (Kahneman and Tversy 1979). But our *institutions* for dealing with risk can also be regarded as risk averse or risk embracing. In the risk management literature of health and safety, risks are often viewed as a problem to be minimized, an evil to be

eradicated. Similarly, in social services or criminal justice or health care, where individuals and communities are characterized as 'at risk' (of social problems or crime or ill health), the overarching aim is to eliminate risk wherever possible. Very much the same approach emerges some environmental literature and in Beck's book, The Risk Society, where risks are presented as overwhelmingly negative in their import – as events to be avoided, catastrophes to be contained.

To this way of thinking, risk is an evil with no redeeming social value and there is no such thing as being too careful. One sees this attitude in versions of the 'precautionary principle' that oppose any new undertaking that runs the risk of environmental damage, and in current attitudes towards the release from custody of certain kinds of criminals (above all, sex offenders) where any level of risk, however minimal, is deemed unacceptable. Today's common usage often makes us think of risk as danger, as a bad thing to be avoided. We don't talk of people being 'at risk' of winning the lottery, or about high intelligence being a 'risk factor' that predicts university entrance. Negatives such as ill health, social problems and large-scale disasters have dominated our discourse about risk.

This zero-tolerance approach may be embedded in certain institutions, but it is a poor guide to our general attitudes towards risk and risk taking. As Adams points out, the figure of homo prudens – zero risk man – is a figment of the risk manager's imagination rather than a description of characteristic human attitudes. Adventurous, enterprising individuals are drawn to risk. They embrace it, deriving excitement from the prospect of uncertain outcomes, affirming their autonomy by tackling danger or experiencing the unknown (Baker and Simon 2001). Even the less venturesome among us are prepared to take certain risks, particularly if we assume the risks voluntarily, if we can, to some degree, control the outcomes and the risk involved, and if our gambling carries the chance of some reward. Taking risks, acting boldly, refusing to follow the dictates of prudent rules and statistical

averages are, for many people, a measure of their agency, their will, their essential subjectivity.

Enterprise and the embrace of risk

One way of countering overly negative discussions of risk is to bring economics into the discussion. According to the OED, a secondary definition of risk is 'the chance that is accepted in economic enterprise and considered the source of (an entrepreneur's) profit.' The foundation of the economic system that dominates the western world – production for exchange in the market in pursuit of profit – is built upon the willingness of investors and entrepreneurs to take risks with their assets in the uncertain expectation of financial reward in the future. As Bernstein (1996; 3) puts it, 'the capacity to manage risk, and with it, the appetite to take risk and make forward-looking choices, are key elements of the energy that drives the economic system forward.' No risk, no profit, no capitalism. In that sense, risk and its management have been central to our social arrangements ever since modern capitalism came to dominance.

When economists talk about 'managing risk' they do not mean eliminating it entirely. In a competitive market economy, zero risk is a formula for zero returns. Managing risk means steering it, controlling it, minimizing its detrimental effects while making the most of its positive potential. Control of this kind is possible because the uncertainties faced by firms are not truly random events but instead patterns of human action (demand levels, consumer attitudes, exchange rates, production costs….) that can often be predicted with some degree of accuracy. The essence of risk management lies in maximizing areas where knowledge – and hence control – are possible, while avoiding areas that are less known and less predictable (Bernstein 1996: 197). Consequently, the capacity to make accurate risk estimates and forecasts is a major commercial asset that companies nurture and develop. The spectacular earnings made by day traders and

dot.com start-ups in the 1990s, and the equally spectacular collapse of many of these seat-of-the-pants entrepreneurs, illustrate the rewards of taking big risks and the penalties for failing to manage them effectively. It also illustrates the role of *time* and *regression towards the mean*, both of which shape the odds of any on-going enterprise.

Risks and benefits

Reference to economic issues brings out an obvious point that is often overlooked in areas such criminal justice where public safety considerations dominate discussion. That point is simply that risks are usually a corollary of activities or decisions that are otherwise beneficial in their consequences. Many of the risks inherent in modern life – from car crashes to global warming, from air pollution to obesity – grow out of activities that bring important benefits to individuals, communities and national economies. In an important sense, risk is the necessary accompaniment of freedom and choice. Where there are no choices to be made there are no risks to run. Fatalism and determinism exclude risk calculation. Choice, on the other hand, involves weighing options. The expansion of choice is necessarily the expansion of risk – if only the risk of making the wrong choice. Hence the significance of techniques such as cost benefit analysis and comparative risk assessment and their prominence in contemporary decision-making.

Thinking about risks must always include thinking about the benefits attached to the risky activity, as well as to the costs (including opportunity costs – one can't regulate everything) of reducing these risks by regulating the activity in question, or restricting the choices of the actors involved. The best risk management strategies are those that reduce risks in ways that have fewest consequences for the desired activity to which the risks attach.

Risk and modernity

What is it about contemporary society that makes discourse about risk so resonant? What social forces have prompted the rise of risk and reflections upon it? Are we now a 'risk society' as Beck and Giddens claim and if so, precisely what does that phrase imply?

In answer to these questions, and by way of a conclusion, I will outline an argument built around the following assertions: (i) Risk and our attempts to control it are corollaries of purposeful action and are thus ubiquitous elements of human experience; (ii) Modern societies have become more successful in assessing and managing risk thanks to the development of probability theory, statistics, and systematic techniques of measurement and control; (iii) Techniques of systematic risk management have become a pervasive element of modern organizations and institutions; (iv) Questions that bear upon risk management have increasingly become a source of anxiety in contemporary culture because of raised expectations, decreased levels of trust, and new social sources of insecurity; (v) We are not a 'risk society' in the sense of being exposed to more, or more serious dangers. If we are a risk society it is because we have come to be more conscious of the risks that we run and more intensely engaged in attempts to identify, measure and manage them.

Risk is ubiquitous

Human beings have always engaged with chance, with uncertainty, and with the risks involved in an unknown future. Risk is a corollary of planned action. Whenever human beings engage in purposeful, future-oriented action, they encounter the possibility of mischance and try to control for that possibility. Hunting and gathering, planting crops, making tools, making promises, forming families, bearing children – all the most basic forms of human activity – involve attempts to 'colonize the future', to realize present-day plans in some anticipated

future time. Knowledge about what that future might bring, and methods of controlling it, have consequently been among the basic tools of human life, and among the most sought-after of human assets. The search for ways to know the future and techniques to control it has accompanied human life from the beginning, giving rise to auguries, omens, prophecies and propitiating sacrifices, as well as to more rational methods such as induction from past experience and the careful observation of seasonal patterns and temporal cycles. This search has been energized, at least since the 19th century, by the discovery that social conduct can be better governed once its aggregate patterns are discerned and its norms established (Hacking 1990; Foucault 1991).

Peter Bernstein (1996:1) may exaggerate when he claims that 'the revolutionary idea that defines the boundary between modern times and the past is the mastery of risk: the notion that the future is more than a whim of the gods and that men and women are not passive before nature.' But his basic point – that our capacity to colonize the future and to control risk has been revolutionized by the development of rational techniques derived from mathematics and statistics – is unquestionably true. Our capacity to develop reliable predictions about the future by analyzing data from past experience has been utterly transformed by the development of statistical inference and methods of systematic enumeration. Census counts, book-keeping, registers of births and deaths, mortality tables, crime figures, accident rates, the whole avalanche of printed numbers – these have been raw materials for forecasting and planning the future. (Hacking 1990; Bernstein 1996). Large data sets, carefully sampled and sorted, systematically analyzed by reference to normal distributions, standard deviations and other statistical concepts, together with a growing scientific understanding of how things work, have altogether transformed our capacity to tame chance and deal with uncertainty. What marks off modern society from its predecessors is not the

attempt to master risk and to colonize the future, but the invention and widespread adoption of rational, systematic methods for formally and effectively doing so.

Rationality, reflexivity and risk

Max Weber (1978) and Michel Foucault (1977) have characterized modern society as being driven by processes of rationalization and discipline that bring norms of purpose-rational action to bear in all areas of social activity, from production and commerce to government and the conduct of everyday life. Anthony Giddens (1990; 1991) has elaborated on this theme by describing the importance of reflexivity in modern organizations and modern life more generally, with institutions and individuals increasingly monitoring their conduct in systematic ways, and bringing scientific knowledge and expertise to bear on their decision-making. More recently, Michael Power (1994; 1997) has described the 'audit explosion' – the rapid spread of techniques of inspection, verification and control throughout businesses and public sector organizations in an effort to increase the transparency and accountability of these organizations and thus enhance their effectiveness.

Each of these interlinked processes – rationalization, reflexivity, and regulation through auditing – is characteristic of modernity, and each one is designed to identify, measure and manage the various risks that are faced by the particular individuals or organizations in question. Risk, its monitoring and its management, is a built-in element of reflexive action. And as society becomes more organized, more rational, and more managed; as audits and inspections spread out from the business world into other organizations and areas of life, systematic risk assessment and management become ever more pervasive. Formal risk management is, in that sense, one of the characteristic institutions of modern society. Its spread – like the spread of discipline, rational management techniques, reflexivity and auditing – is part of what we mean when we talk of modernization.

The spread of risk management into new settings has significant consequences for the organizations and institutions concerned. As actuarial or algorithmic styles of risk-management are taken up in institutions where risk was previously managed in less formal, or more clinical, ways, the institutions change. Scholars have traced the ways in which the introduction of actuarial risk management has transformed decision-making in mental health and criminal justice settings, with consequences for the ways in which these institutions conceive of the problems they address and exercise the powers at their disposal. (Feeley and Simon 1992; Castel 1991) Others have noted that the adoption of risk discourse or even risk management protocols do not necessarily govern decision-making in these settings, since other considerations are also in play. But it is clear that as scholars begin to investigate their particular area of expertise, they will find more and more evidence of the spread of risk technologies and their increasing influence in modern decision-making. As Ewald (1990; 147) puts it, 'society has come to understand itself and its problems in terms of the principles of the technologies of risk.' Modern societies are risk-managing societies.

Beck's 'risk society' thesis

The proliferation of formalized risk management in all sectors of modern society, together with the importance of risk industries, may explain the empirical resonance of the new wave of sociological risk scholarship. But it does not account for the urgency and anxiety that now seems to drive much of the public discussion of risk – a cultural mood that is clearly expressed in popularity of Beck's 'risk society' thesis. If risk management is a routine element of the lifeworld, why does it generate so much anxiety?

Beck's claim is that we are 'living on the volcano of civilization' as we enter upon a new stage of modernity. This latest phase of the modernization process (which, in his account, runs from pre-modernity, to the 'simple

modernity' of industrial society, to the 'reflexive modernity' of contemporary 'risk society') is fraught with new risks and hazards that we ourselves have manufactured and that are massive in their potentially global impact. 'Risk society is a world society……Risk society is a catastrophic society' (Beck 1992:22-4)

> 'By risks I mean above all radioactivity, which completely evades human perceptive abilities, but also toxins and pollutants in the air, the water and foodstuffs, together with the accompanying short- and long-term effects on plants, animals and people. They induce systematic and often *irreversible* harm, generally remain invisible, are based on causal *interpretations*, and thus initially only exist in terms of the (scientific or anti-scientific) *knowledge* about them. They can thus be changed, magnified, dramatized or minimized within knowledge, and to that extent they are particularly open to social definition and construction. Hence the mass media and the scientific and legal professions in charge of defining risks become key social and political positions.' (Beck 92: 23)

Beck's risk society is a dystopia of unintended consequences. History has caught up with modern societies causing them to focus less and less upon technical and economic development, and more and more upon the problem of managing the hazards that this development entails. In this context, individuals and institutions are heavily dependent upon expert advisers as guides to the risks that they run, the hidden dangers they face and the safest course of action available. But experts provide conflicting information. And the more the public learns about science, the more it realizes that science is fallible, provisional, always subject to doubt and revision. 'Science becomes *indispensable*, and at the same time *devoid* of its original validity claims' (Beck 1992: 165). This, together with the cumulative experience of disasters and poorly managed risks, has produced an anxious public that no longer trusts scientists to get it right and no longer trusts governments to keep us informed. Risk professionals no longer monopolize risk discourse – a situation that both democratizes debate and makes it more explosive. The result is a new kind of society in which 'risk production'

overtakes ‘wealth production’ and struggles over the distribution of hazards displace struggles over the distribution of wealth as the central theme of political conflict.

Beck emphasizes the unprecedented size and catastrophic potential of today’s manufactured hazards, together with the intrinsic unknowability of their likelihood.

> ‘Now manufactured uncertainty means that risk has become an inescapable part of our lives and everybody is facing unknown and barely calculable risks. Risk becomes another word for ‘nobody knows’. We no longer choose to take risks, we have them thrust upon us. We are living on a ledge – in a random risk society, from which nobody can escape.’ (Beck in Franklin 1998: 12)

Beck’s analysis seems diametrically opposed to that of Bernstein (1996) who celebrates the ‘mastery of risk’ that separates modern society from its predecessors, and to that of Hacking (1990), who talks of ‘the taming of chance’ and emphasizes how social control – over both people and events – has been greatly extended by modern techniques of classifying, counting and calculating. Whereas Bernstein and Hacking document the ways in which modern science has succeeded in extending our capacity to manage risks and control outcomes, Beck is convinced that modern science has run up against its limits, having manufactured dangers – “uncontrollable risks” – that will forever remain beyond human control.

More risk or more risk management?

Beck’s cataclysmic analysis seems overstated; both in its historical judgments and in its account of the dangers we now face. It is true, of course, that modern science and engineering have created substances, technologies, and forms of energy with the power to bring death and destruction to large parts of the planet. It is true that global commerce and communications intensify our

interdependencies, increase our mutual exposure, and make regulation harder to impose and implement. It is true that industrial production, the burning of fossil fuels, and the spread of motorcars, have brought about changes in the earth's atmosphere, though it is not clear that these changes are as detrimental as some environmentalists fear (for a skeptical account, see Lomborg 2001). And it is undeniable that disasters such as Bhopal, Chernobyl, Three Mile Island and September 11th 2001 have shown the appalling injury and destruction that chemical, nuclear or terrorist incidents can bring in their wake.

But human societies have always faced massive threats to life and well being – whether from 'nature', in the shape of plagues, famines, floods, and earthquakes, or from other people, as in wars, pogroms and genocides. Most of these threats are now better understood and better controlled than at any time in human history. That banks no longer fail with the calamitous frequency that they did a century ago is a mark of this change (Braithwaite 2000). That mortality and morbidity rates in the developed world have been continually improving for at least the last century (BMA 1987) is crude but compelling evidence that many risks are now being better managed than ever before. That international organizations have been developed to manage the threats of nuclear aggression, ecological disaster and financial collapse hardly guarantees that we will not be convulsed by some future disaster, but it does reduce that risk considerably.

Of course many of the risks to which Beck refers are the result of new processes and technologies, and may yet prove devastating in their future impact.[8] But it is not hopelessly optimistic to believe that the same scientific and engineering skills that manufactured these risky processes will be capable of designing technologies and control systems that will manage them effectively, minimizing their misuse, avoiding accidents, and reducing harmful side effects to tolerable levels. And where such safety measures and controls are lacking, or else are perceived as inadequate, contemporary risk awareness is liable to push for

more conservative, precautionary approaches. The growing importance in contemporary law and policy of 'the precautionary principle' suggests that the onus of proof is shifting from the victim of a hazard to the actor who might bring it about.[9] Our relationship to science and technology, and to the modernist project of transforming the world and colonizing the future, is now much more ambivalent than it once was. What has changed most, it would seem, is not the risks we face but the perceptions and sensibilities we bring to bear upon them.

Countering Beck's world-historic pessimism with a Panglossianism of equal proportions doesn't get us very far, however. Debates that trade generalized claims about aggregate risk levels quickly lead away from the facts towards the cultural and political variables that Mary Douglas describes. There are, of course, global risks that require global solutions, but for the most part we would do better to avoid impressionistic analysis that talks of "society as a whole", or "world risk society" (Beck 1999) and aim for greater specificity. To aggregate risks as Beck does is to ignore their intrinsic conditionality and reactivity, as well as the distributive issues involved. The dystopian vision that Beck projects also tends to occlude the core problem in today's "risk transition" (WHO 2002) which is not technology and its unwanted side effects, but rather choices about life-style, consumption, and social relations.

Individualization and insecurity

It is for this reason that Beck seems more convincing when he develops a subsidiary thesis about the "individualization" of contemporary western societies. This refers to the impact of a series of social and cultural developments that transformed the social position of individuals in the second half of the 20th century and altered the ways in which they relate to their world and to the threats that it contains. Beck uses the ideas of 'individualization' and 'the end of tradition' to refer to the various ways in which the structures of class, gender,

work, and locality have increasingly relaxed their grip upon individuals. This process has given individuals more freedom, more mobility, more choice, and more power to shape their personal identities in non-traditional ways, relatively unconstrained by other people. But the liberating effect of these social trends has come at a cost – not just to the stability of families and communities or to those left behind, but also to the affluent individuals who exercise these newfound freedoms.

The individualized world is a world of choice, of multiple options and endless possibilities. A person born into a particular class or faith, growing up in a particular neighbourhood, developing a particular sexuality, working in a specific job, married to a specific spouse…… need not be forever defined by these circumstances. He or she is now more free than before to leave these ties and identities behind and create new and different ones elsewhere. But this post-traditional world of choice is also, and necessarily, a more uncertain world, replete with risks and dangers. People and places change. Friends move. Families fall apart. Jobs come and go. Identities are no longer set. The self is no longer stable.

In this new context, there are fewer settled traditions and established group norms to which the individual can turn for guidance when hard choices need to be made. Individuals must often face these risks alone. Of course they can turn to experts, therapists and professional advisers, and people do so in increasing numbers. But conflicts of expert opinion and the variability of goals and values often make this a source of frustration rather than reassurance. The result is an increasingly endemic sense of insecurity – experienced even by well-to-do individuals who are, by historical standards, healthier and more affluent than ever before (Sennett 1998; Bauman 2000, Garland 2001). Individualization has been driven by the demand for greater choice and individual freedom, and it has made these goods available to more of the population than ever before. (Neo-liberal

politics are the generalized embodiment of this desire.) But it has also been a recipe for insecurity – for low levels of commitment, new kinds of personal risks and new kinds of doubt about personal choices. Modernity's freed-up individuals enjoy their freedoms against the background of a newfound dependency upon expert systems, newfound anxiety about everyday risks, and newfound uncertainty about the lives they choose.

With this social context in mind, it is easier to understand the sense of dread produced by the existence of large-scale, insidious risks – particularly those risks that cannot be controlled by individuals. If risk perception and fear levels are shaped by subjective orientations as well as by objective evidence, it should not surprise us that people focus upon risks that mirror the structure of their personal fears and anxieties.[10] That risks are socially constructed makes them no less real, but it does mean that they can be magnified and dramatized in the public imagination, as projections of a structure of personal anxieties put in place by the new uncertainties of social life. In this highly reflexive, low-trust culture, one of the key functions of safety regulation – its tendency to blind us to the risks we routinely take – is increasingly undermined. Security and insecurity, risk management and risk awareness, urban fortification and fear of crime – our responses to risk and the risks we perceive frequently intensify one another instead of canceling one another out.

Citizens of contemporary western nations are, on the average, healthier, live longer, and are better protected from economic risks than those of any prior societies. And if they face more in the way of self-imposed environmental hazards or international terrorist threats, then they are also more actively engaged with the management of these risks than ever before. But success in the regulation and reduction of risk hasn't prevented the emergence of new sources of insecurity that have their roots in destabilized social relations rather than environmental dangers. And insecurities, like risks, are interactive, feeding off one another and corroding

the trust upon which modern social life increasingly depends. If we live in a 'risk society' it is not in the sense of one that is more dangerous than before by any objective measure. If we live in a 'risk society' it is because we are more democratically engaged, more reflexively rational and more prone to distrust in our engagement with the phenomenon than were previous generations.

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[1] Some representative examples of the different genres I have in mind are the following: the social theories of Ulrich Beck and Anthony Giddens; economist Peter Bemstein's worldwide bestseller, *Against the Gods*; the cultural anthropology of Mary Douglas and Aaron Wildavsky; the Foucauldian analyses of power produced by Francois Ewald and Robert Castel; historical studies of tort and legal regulation by George Priest and Theodore Lowi; Mark Geistfeld and Richard Stewart's analyses of the precautionary principle and its legal implications; the normative jurisprudence of Steven Perry and Jules Coleman ; the welfare state studies of Peter Baldwin and Pierre Rosanvillon; the prediction studies of John Monaghan and Peter Greenwood; the 'prospect theory' developed by psychologists Daniel Kahneman and Amos Tversky; Dorothy Nelkin's work in the sociology of science; recent work in the sociology of insurance, of accounting, of governance, of social control, of punishment, etc. etc.

[2] Following Mary Douglas, Thompson et al (1992) offer a typology of cultural types – egalitarians, hierarchists, fatalists and individualists – and their characteristic ways of interpreting and responding to uncertainty.

[3] Last year's experience with anthrax in the mail revealed all of these problems. Government officials struggled to find the right balance between safety warnings and panic-inducing alarms, while casting around for accurate information about exposure levels and health consequences. Meanwhile, citizens in the affected cities struggled to figure out what precautions to take – wearing gloves, taking prophylactic doses of anti-biotics, inspecting the mail, leaving town.

[4] Insurance protects against individual calamity by collectivizing risks and rendering them predictable. Insurance pools the risks faced by large populations of clients, so that each individual bears only the cost of the insurance premium and need no longer worry about additional loss. Freud says that psychoanalysis is not a cure for life's suffering, but rather a means of replacing neurotic misery with common unhappiness. In the same way, insurance is no miracle cure for life's dangers. What it offers the individual is the possibility of dealing with these hazards in advance, and at an averaged cost, by paying a standardized premium. Insurance stabilizes risk and renders its costs predictable – it doesn't do away with it altogether.

[5] 'The predominant function of modern law is to allocate risk….In the field of contract law, for example, contract litigation only a few decades ago turned chiefly on differing interpretations of the terms of underlying written contracts. In modern contract litigation, in contrast, the issues have been completely reoriented around the issues of risk. The fact that some change in conditions led one of the parties to breach the contract is only the beginning of the inquiry. The issue before the court is which party should bear the risk of the change in conditions that impelled the breach' (Priest 1990: 209).

[6] The neo-liberal assumption that governments can encourage entrepreneurial risk-taking by removing protections runs up against the evidence. '[A] review of …risk-control policies tends to lead to a conclusion virtually opposite the prevailing wisdom, which holds that there is an inverse relationship between risk control and risk taking, as though people become more and more risk averse as risk-control policies spread……[T]he long history and extent of public risk-control policies…suggest that the relationship between risk control and risk avoidance, rather than being inverse, is direct, the one depending on the other' (Lowi 1990: 26). Successful entrepreneurs do take risks, but do so against a background of extensive protections and hedges, many of them – such as the $500 billion savings and loan bailout in the USA – supplied at the taxpayers' expense.

[7] 'Our courts have defined two basic principles of decision making to internalize costs to create incentives to reduce the risk level as much as is practicable. First, if the injury could have been practically prevented, liability will be placed on that party in the relatively better position to prevent it. Second, if the injury could not have been practicably prevented, liability will be placed on that party in the relatively better position to spread the risks of the injury' (Priest 1990: 216).

[8] The major risks in this respect would seem to lie not so much in technology and its development, but rather in the collapse of the control systems designed to safeguard hazardous substances, either because of economic collapse (as in the former Soviet Union) or because of the actions of rogue states and terrorist organizations. The management of political risks of this kind calls for solutions that rely less on scientific knowledge than on international co-operation and strategic intelligence.

[9] For a detailed discussion of the principle's various versions and practical applications, see Stewart (forthcoming).

[10] Anyone wishing to understand the place of risk in contemporary culture can do no better than read Don DeLillo's novel White Noise (1985), which explores this psychic current and its social roots. The publisher's blurb, which could have been written by Ulrich Beck, portrays the risk society as the dark underside of modernity, and suggests its intimate links to the new structures of family life and individualized freedom:

> *'Jack Gladney teaches Hitler studies at a liberal arts college in Middle America…..Jack and his fourth wife, Babette, bound by their love, fear of death, and four ultramodern offspring, navigate the usual rocky passages of family life to the background babble of brand-name consumerism. Then a lethal black chemical cloud floats over their lives, an "airborne toxic event" unleashed by an industrial accident. The menacing cloud is a more urgent and visible version of the "white noise" engulfing the Gladney family – radio transmissions, sirens, microwaves, and TV murmurings – pulsing with life, yet heralding the danger of death.'*

In his fictional account of this 'airborne toxic event' and his characters' reaction to it, DeLillo anticipates every single one of the 'negative' factors that, according to a later report by the Royal Society (1992) are known to prompt individuals to recoil from risks…..

> '(1) Involuntary exposure to a risk; (2) Lack of personal control over outcomes; (3) Uncertainty about probabilities or consequences of exposure; (4) Lack of personal experience with the risk (fear of unknown); (5) Difficulty in imaging risk exposure; (6) Effects of exposure delay in time; (7) Genetic effects of exposure (threatens future generations); (8) Infrequent but catastrophic accidents ('kill size'); (9) Benefits not visible; (10) Benefits go to others (inequality); (11) Accidents caused by human failure rather than natural causes.' (Royal Society, 1992: 101)