Current Directions in Risk Research: New Developments in Psychology and Sociology

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Abstract

This paper reviews the main approaches to risk in psychology and sociology and considers recent developments. It shows that research continues from a wide range of perspectives. Some streams of work in sociology have moved more towards the individualist approaches often seen as typical of psychology. Opportunities are thus open for cross-fertilisation and for using insights from both disciplines in the development of research.

Keywords

Risk theories; Psychology; Sociology; New Developments; Linkages

1. DEVELOPMENTS IN PSYCHOLOGICAL AND SOCIOLOGICAL THEORIES OF RISK

Risk research has been influenced by a wide range of theoretical perspectives and methodological approaches. This paper seeks to chart out the contributions of some of that work, paying particular attention to psychology and sociology, and to identify current areas of development, drawing on a wide range of sources.[1] It shows that recent developments reflect a general move to acknowledge the significance of social and cultural factors more seriously in understanding risk; interestingly, there is a shift towards constructionism and, to some extent, to more social approaches in some work from psychological and social psychological traditions. Constructionism is of course important in sociology, but here there is also a tendency towards more individualist and, to some extent, realist accounts. This brings developments in psychology and sociology closer together and opens up opportunities for cross-disciplinary research.

2. PSYCHOLOGICAL APPROACHES

The most important approach in mainstream psychology might be termed the ***'cognitive/learning'*** perspective. The central idea is that humans are more or less rational choosers, within the constraints of their capacity for reasoning and learning, the experiences to which they have access and the context in which they live. This has been fruitful in stimulating research on the influences on cognition and on the information which is grist to the cognitive mill. This framework provides excellent opportunities to develop understanding of how the formal rational action models of the central tradition in economics relate to the way people think and behave, and has generated opportunities for developments in economic psychology. A second stream of work, drawing on social psychology, might be termed the ***empiricist psychometric*** approach. This has been particularly significant in an important stream of work on risk perception and behaviour. It uses evidence from questionnaire survey, interviews, experiments and a range of other methods, and typically does not rest on strong theoretical presuppositions about the field of study, often being primarily concerned with issues of risk communication. Recent developments in work from both approaches stress the importance of affect and emotion in contributing to risk understanding.

2.1 Cognitive/Learning Perspectives

Renn and colleagues point out (2000, 4) that the account of rational action in economic theory is much more precise and sophisticated than that used in everyday life; the latter refers to any actions which involve conscious deliberative choice, while the former assumes a rigorous distinction between ends (not the concern of rationality) and means (selected only via rationality), maximisation or optimisation of utility as the over-riding basis for action and a strict methodological individualism. Most psychological work follows the second approach and cognitive research typically admits complex hierarchies of ends and means, multiple motives and cross-influences between actors (Hargreaves-Heap et al 1992).

[1] Literature reviews carried out by the SCARR network (Zinn 2004a and 2004b, Taylor-Gooby, 2004) and others (Rohrmann, 1999, Eiser, 2005a, Weyman and Kelly, 1999, Lupton, 1999, Slovic, 2001, Boyne, 2003, Loomes, 2005, Pidgeon, Hood, Jones, Turner and Gibson, 1992, Royal Society, 1997, Cabinet Office 2002), Eiser 2005b).

Broadly rational actor approaches understood in this way may be refined into what Weyman and Kelly (1999 14) refer to as 'value-expectancy models', where behaviour is seen to result from assessment of the seriousness and likelihood of outcomes in a sort of individual cost-benefit model (Fishbein and Ajzen 1975). Their meta-review of the literature indicates that associations between perceptions of risk and behaviour are often inconsistent and in most cases weak (1999, 15). This finding is echoed in a great deal of experimental and observational research. Loomes, writing from an economic psychology perspective, points out in a detailed literature review of work on how people value different 'goods' and 'bads' or hazards and opportunities that pure rational actor assumptions are difficult to maintain: people are often sensitive to factors that are theoretically irrelevant and insensitive to those that we would expect to be significant if their choices were dictated by purely rational considerations (2005). Examples of the first issue are the fact that the starting point or the range of values specified in a question, or chosen at random, or even set entirely by the respondent, has major influence on the value that people will assign to something. Moreover, people will produce widely different estimates of how much they would pay to avoid a particular risk, compared with how much they would regard as appropriate compensation for accepting an exactly equivalent risk, even when they seem perfectly well aware that the risks are equivalent (Dubourg et al, 1997, Bateman et al 2002). The value of a hazard does not seem to be proportional to its size or intensity. Typically, in answer to a question about how much they would pay to reduce a particular risk they will not be willing to pay three times as much for three times the reduction (Jones-Lee et al, 1995).

These issues have been addressed in four main ways. An enormously fruitful stream of work derives from the insights of Kahneman and Tversky (1974, see Kahneman, Slovic and Tversky 1982). These authors build on the long tradition of experiments in economic psychology which demonstrate that people often make mistakes in evaluating and comparing risks (Hargreaves-Heap et al, 1992, ch 2) through a series of experiments which enable them to identify a number of common deficiencies in recognition and understanding of risk. These 'cognitive illusions' are, broadly speaking, analogous to the perceptual distortions we ordinarily experience and learn to compensate, for example, in perspective, parallax motion and mirror inversion. The central claim is that people develop convenient mental strategies or 'cognitive heuristics' in order to facilitate evaluation. These include: availability bias (the tendency to overestimate the significance of rare but striking factors), immediacy of effect (results that directly follow causes tend to receive greater attention in thinking about risk than more remote ones) and loss aversion (the damage of a loss tends to be weighted more highly than the benefit of an exactly equivalent gain). Cognitive heuristics shape risk judgements.

A second stream of work draws on learning and social learning theory. Eiser (2005a) explores the range of problems that result from the fact that a successful risk learner needs to gather appropriate feedback from the environment on when to pursue or not to pursue a course of action, and to be able to modify behaviour fittingly. Learning theory deals with how we assimilate information from practical situations, while social learning theory (Mischel and Shoda 1995) extends this to the experientially-based views that people acquire about the social environment in which they live and how they can handle it with confidence. In practice, many of the risk situations with

which we deal provide poor feedback. For example, most of the time speeding drivers reach their destinations safely – and thus learn that the risks associated with speeding don't apply to them (Eiser 2005a 23).

A third approach examines cognitive processes more directly and develops theories of 'mental modelling'. The mental modelling approach (Craik 1943, Johnson-Laird 1983) starts out from the idea that people develop representations of issues in their minds, which may include concepts and the rules which relate them, as part of the process of constructing explanations. In application to risk, discussion of mental models has often focussed on assumed critical gaps in cognitive understanding of risk in the minds of the lay public. These may then explain non-rational responses to evidence. This then feeds into discussion of risk communication (Morgan et al, 2001) since study of how mental models evolve may provide insights into the success or otherwise of particular communication exercises. For example, Bostrom et al conclude from a study of popular perceptions of climate change: 'lay people display a variety of misunderstandings and confusions about the causes and mechanisms of climate change' (1994a, 982). They then go on to propose a structured method for improving mental models which incorporates techniques for evaluating changes in the way people think about the issues. A similar approach is adopted towards mental models of hazards using the example of radon gas (1994b).

Weyman and Kelly's review states that the methods used are often innovative, involving free association and other ways of eliciting beliefs (1999, 11). The approach can also be applied to expert mental models as well as to the deficiencies in lay understanding. Pidgeon argues that the approach offers possibilities for development in approaches to risk, provided it remains agnostic as to the superiority of any particular model (Pidgeon et al, 1992, 121-2). Thus Cox et al discuss the different mental models of chemical hazards held by experts, workers and managers and argue that 'the juxtaposition of expert and user understandings of chemical risks enabled us to identify knowledge gaps and misunderstandings and to reinforce appropriate safety beliefs ..employers and employees may gain improved knowledge' (2003 311). From this perspective, the mental model may start to resemble the socio-cultural assumptions of different groups discussed by sociologists.

A fourth recent approach argues that the cognitive-learning perspective provides a limited account of how people understand risk and make risky choices. Emotional and affective factors are also significant. Experimental work indicates that in some contexts individuals can be understood to use emotionally based judgements to supplement or supplant rational judgement in assessing situations or making choices, particularly those involving time-pressure or uncertainty. Finucane and colleagues apply the point to the commonly found inverse relationship between judgements of risk and judgements of benefits. Risks and benefits are analytically distinct which makes the observation that the more risky something is, the less likely it is to be judged beneficial of interest. They explain the finding by positing affect as an underlying orientation to the particular issue which influences judgements both of risk and of benefit (2000a, b, 13; see also Loewenstein et al 2001; Forgas 2003). A series of UK studies examining judgements about GM food shows an analogous relationship between trust in regulatory bodies and judgements of risk. The studies show that both are founded on an affective orientation which determines the basic acceptability of this new technology (Eiser, Miles and Frewer, 2002; Poortinga and Pidgeon, 2005).

There are parallels to the notion of 'facework-based trust' (Cook, ch 1 in Kramer and Cook, 2004) or 'quick trust' (Alaszewski, 2003, 238) with a strong affective component in accounts of how people make decisions whether or not to trust doctors on the basis of brief interviews, when they themselves are not competent to judge the issues but must arrive at a choice.

Recent discussions of a possible '*affect heuristic*' have been influential in recent developments in psychometry. Alhakami and Slovic (1994) produce evidence to indicate that positive affect is associated with perceived high benefit and vice versa. Slovic has combined affect and cognitive heuristics in a tentative account of risk perception and response that sees both as operating in concert, leading to a further layer of complexity in risk judgements. For example, the effectiveness of cigarette advertising even on groups who are aware of the damaging effect on health may be partly attributed to the success of commercial interests in associating cigarettes with positive affect, which over-rides the concomitant cognitively-based choice to quit (Slovic et al, 2004).

The first three solutions to the anomalies between the predictions of a broadly rational-actor/cognitive approach and experimental evidence operate in terms of some identified deficiency in the way most people, and especially the lay public, grasp the issue. This may derive from the inappropriate use of cognitive heuristics, the imperfections of learning, especially in complex social situations, or the weaknesses of mental models. These may plausibly be explained in terms of an evolutionary model that leads to human cognitive processes that are ill-suited to dealing with complex social situations which did not typify experience at the time when they developed. The fourth approach, pointing to the co-existence of affective and cognitive approaches which may overlap or distort risk cognition may also be understood in this way. Arguably, humanity evolved in circumstances where an immediate affective responsive to danger rather than a slower deliberative one may well have been helpful (Epstein, 1994). Loomes (2005), however, takes the argument one stage further by stressing the point that affective issues are best understood not as a distortion of the cognitive process, but as simply an unavoidable component in how people make risky choices.

He draws on evidence that particular aspects of an experience may have a disproportionate effect in colouring perception of the whole. An extensive research tradition discusses the importance of primacy (appearing at the beginning of a series) or recency (appearing at the end) influences recall of a member of the series (see, for example, Page and Norris, 1998, Altmann, 2000). In relation to the kind of assessment relevant to risk evaluation, Kahneman (2000) discusses the way in which the value (positive or negative) of some previous experience is significantly influenced by what happens in the last few minutes rather than during the whole. Correspondingly, the benefit anticipated from some new development in someone's life (for example, winning the lottery) tends to be over-weighted, because the scale of the transition rather than the duration of the new state plays a disproportionate role in the valuing of the outcome. Loewenstein and O'Donoghue (2004) argue that contextual framing operates in a similar way. Similarly, Kemp and Maxwell (1993) and Hsee (2000) show that the context in which something is set rather than intrinsic factors make a substantial different to how it is valued.

Loomes relates these results about the importance of situational factors in evaluations to the finding that the value chosen as the starting point on a scale and the range of values one sees as available (the 'modulus' employed) has a major impact in influencing the way one values something. The point is that people have to carry out some such process in arriving at a valuation of an experience. The cognitive/affective model suggests that they are typically influenced by particular impressions of the experience (perhaps the brief end-period of something spread over time or the context in which a particular object is set) in doing this. However, there is no available basis for pure objective assessment, independent from context and framing. This is just how people are. Redesign of an experiment may lead to different valuations by varying context or the salient features, but that does not alter the basic point.

To sum up, a strong strand in the mainstream of psychology understands risk perception and response in terms of the limitations in cognitive learning and modelling capacity of people understood as creatures endowed with rationality and learning capacity developed through evolution and seeking to manage risks within their environment. The model of frail, enquiring but, in principle, correctable humanity that results is further challenged by a direction in research that points to affective factors as playing an important role in relation to risk. One strand in this work suggests that affect is intrinsic to risk perception and response: it is not so much that people make mistakes for understandable reasons, as that they deal with risk in a particular way, and this is something with which we must live.

2.2 Psychometric Perspectives

The psychometric modelling of risk uses a number of quantitative measures including questionnaire studies, magnitude estimation, numerical scaling and attitudes surveys. It assumes that 'risk is subjectively defined by individuals who may be influenced by a wide array of psychological, social, institutional and cultural factors…many of these factors and their interrelationships can be quantified and modelled in order to illuminate the responses of individuals and their societies to the hazards that confront them' (Slovic 2001 xxiii). It is sometime distinguished from the cognitive rational actor approach as dealing with 'expressed preference' (Slovic, 2001, xxii), as against the 'revealed preferences' of economic terminology (Starr 1969). The evolution of psychometric work may be traced in three main phases. Initial work on the acceptability of risk indicated that most risks could be readily located by individuals within a two-dimensional factor space. The dimensions concerned on the one hand dread – the extent to which the consequences of the risk provoked fear – and familiarity – the extent to which the risk was seem to be known and controllable or, alternatively, simply uncertain (ch 5, see also Rohrmann, 1999; Renn, 2005).

Further research, focused not so much on the characteristics of the risks as on those of the groups perceiving and responding to the risks, demonstrated the complexity of attitude structures in terms both of differences and sometimes conflicts between different groups and of patterns of consistency and interrelationship in attitudes. The former issue led to work which demonstrated substantial differences by gender, ethnicity, nationality and social class (2001, xxv; Rohrmann, 1999). An extension of this approach produced regression models in which 'world-views' – 'orienting dispositions' associated with trust, egalitarianism and commitment to democracy

associated with different social groups – were seen to influence risk perceptions and responses (see for example Dake 1992; Rippl, 1999).

More recently, attempts have been made to combine the various approaches. Accounts which rest on both the characteristics of risks and the influence of social factors have been linked in the *Social Amplification of Risk Framework*, This incorporates sources, channels and flows of information and the role of culture and of social institutions in reinforcing or attenuating particular risk 'signals' to provide accounts of why particular hazards are identified as risks and how communication about those hazards impacts or fails to do so on the larger society (Pidgeon et al. 2003 14).

This model essentially offers a framework within which different psychological and sociological approaches can be located. It has been criticised in three main ways. It does not offer any additional contribution to theorising, particularly in terms of weighting the contribution of different theories (Rayner 1988). It fails to recognise the complexity, interaction and, in some cases, conflicts between different theories – for example, the extent to which a cultural account of how risk communication is amplified across some groups but not others, and an individualistic account of the role of experience and cognitive heuristics generates risk perceptions across all individuals (Horlick-Jones, Sime and Pidgeon, 2003 283-5). Thirdly, it finds difficulty in accommodating accounts of how the social conventions and assumptions summed up, for example, in Bourdieu's notion of 'habitus', facilitate or undermine particular risk perceptions (Murdock et al 2003). Nonetheless it is an ambitious attempt to produce an inclusive model even if it is one which has failed to attract much developmental work elsewhere.

2.3. Directions in Psychological Research

To summarise, psychological research includes the rather different directions of the more cognitive and experimental, and more social psychological and psychometric approaches. Both have produced effective and fruitful traditions of work on risk. While there are a number of important streams of work, recent developments in findings and analysis have led researchers to pay less attention to the importance of rationality and cognition and more to affective and (to some extent) cultural factors. We move onto consider the recent development of sociological approaches to risk.

3. SOCIOLOGICAL APPROACHES

Although some sociological work is based on rational actor approaches (Coleman 1990, Gambetta, 1988), most sociologists find this approach unsatisfactory in dealing with situations in which others are involved (Bloor 1995). The distinctive contribution from this perspective has emphasized the role of shared ideas and normative frameworks, understood in terms of the contribution of cultural and social factors, to the understanding and prioritising of risks and responses to them among all those involved. An influential study by Charles Perrow (1984) demonstrated that the interactions between people seeking to manage risks and the increasingly complex technical systems they devise to do so can produce unforeseen consequences. One

outcome may be that efforts to manage risks actually increase hazards. Risk management is not best thought of as a purely technical issue, but also involves understanding the social context in which people respond to risk.

Freudenberg and Pastor's review of the relevance of sociology to risk research and vice versa, points to the value of sociology in providing an informed critique of the simple dichotomy between knowledgeable experts and 'a public that irrationally fears science and technology' (1992 392). They review the literature to show that studies of community politics, of the operation of the media and other communication systems and of the development and validation of scientific expertise indicate that the way in which issues are understood and advanced is mediated by social factors among both groups (1992 397-8). We review three main variants, drawing predominantly on socio-cultural work, risk society approaches and governmentality theories.

3.1. The Socio-cultural Perspective

The socio-cultural perspective was initially informed by the seminal social anthropology of Douglas (1985), and Douglas and Wildavsky (1982). Douglas' key concern was to understand the basic principles which underlie the way in which people see themselves and others and how this influences their behaviour towards each other. She sought to identify fundamental rules which apply across all societies. A central distinction lies between self and others and so that a fundamental of culture is the social construction of Otherness. The 'Other' (whichever individuals or groups are defined as different, as outside the identity of one's own group) is seen as a source of concern and fear, and sometimes of fascination. Her initial work on pollution and on the understandings and rituals surrounding it stressed the significance of boundaries at the level of the individual body and then by extension in the body politic. Dirt is famously matter 'in the wrong place' (1969, 2). The transgression of social boundaries is similarly a source of anxiety, and demands moral rules to define the ordering of the social universe: 'in all places at all times, the universe is moralised and politicised. Disasters that befoul the air and soil and poison the water are generally turned to political account: someone already unpopular is going to be blamed for it' (1992, 5 ap. Lupton, 1999, 6).

Douglas then traces the shift from a moralism of pollution based essentially on a religious framework of sin to a secular one in which threats are understood primarily as risks. Blame can attach to the victim (the person 'at risk') or to the attributed cause of risk ('blaming the outsider' – Douglas 1985, 59). She later developed this in what is termed the 'grid-group' model of social organisation. This essentially distinguishes social processes to do with the cohesion of social groups, from the local community up to the ethnic group or nation, and with how they differentiate themselves from those seen as outsiders, from all other social processes concerned with hierarchy, authority and other constraints on behaviour. She applied this model in relation to responses to risks from HIV/AIDS for example (Douglas, 1992, 111).

Although the grid-group model has not been taken up by many sociologists, socio-cultural perspectives drawing broadly on Douglas' work and on the self/other distinction have been enormously influential. The self/other distinction resonates with psychoanalytic approaches (Kristeva, 1982), and its social applications links to

accounts of ethnic cleansing (Tulloch, 2005), of the ideology of Nazism (Bauman, 1991) of responses to migration, to accounts of the Oriental, to crime (Kemshall, 1997) and to a whole range of issues where risk can be associated with groups defined as other. Current concerns to demarcate refugees and asylum seekers from the rest of the population (Burkhardt 2004) and about Muslim migrants in European countries (McLaren and Johnson 2004) can be readily located within this framework.

These approaches have evolved to include a wide range of cultural bases for risk perceptions, all sharing the view that cultural assumptions across social groups are powerful bases for ideas about risk and how to deal with it. They offer an important alternative to the individualistic and rational actor accounts of risk responses developed primarily in economics, and to the more cognitively based approaches of much of psychology. The main variants may be loosely grouped under the headings of risk society (inspired by the work of Beck 1992 and Giddens 1994) and governmentality theories (drawing on Foucault 1991, Ewald 1986, O'Malley 2000 and others).

3.2. Risk Society Perspectives

Risk society theories have been enormously influential in sociology during the past 15 years. The central theme of this approach is to analyse risk perception and response within the overall framework of a cultural discontinuity giving rise to a new form of modernity. Modernity is here seen as the form of society and the associated pattern of institutions (modern industry, the nation state, the nuclear family) and of assumptions and expectations that directed individual lives that gradually became dominant throughout the developed world from the 17th century onwards. A multitude of factors contributed to this process and a brief summary can only simplify: see Jessop (2002) for a more detailed discussion. The combination of technological development, the availability of capital and reasonably secure and expanding markets advanced the industrial revolution; the continuing refinement of the division of labour, the painful expansion of an international system resting on sovereign nation states, and the political economy of national economic management in the interests of assured growth led to the current international settlement; the critical and scientific spirit of the Enlightenment facilitated much of the social and political change; at the individual level, citizens would increasingly expect governments to provide security and stability, employment to provide a predictable income and family life a continuing framework for intimacy and social interaction. These assumptions shaped institutional arrangements and the planning of individual life. More recently, it is argued, a number of changes have altered the way institutions and individuals understand and manage risk and uncertainty in society and in the life-course.

The important shifts of recent years are associated (Beck argues, 1992 ch. 1) with the fact that modern industry produces not only 'goods' (higher and more assured living standards for most people) but also 'bads' (pollution, radiation, climate change and associated perils, vaccine-resistant disease, and in addition a range of social ills such as slump, unemployment and lack of care in old age as traditional informal mechanisms of resilience decline). The pursuit of 'goods' generates 'bads' as unwelcome side-effects, and the production of 'bads' is often intimately bound up with that of 'goods'. These unintended effects become important in eroding the framework of ideas and fundamental institutions of modernity. Political contests

increasingly centre on avoiding the 'bads' (reducing risks) rather than gaining more of the 'goods' (wealth and the fruits of economic growth). Most of these problems can cross national boundaries and affect social groups indiscriminately: 'smog is democratic' (Beck 1992, 36). The outcome is a world risk society which is increasingly beyond the level of the risk management institutions of the nation state.

These shifts also impact on individual consciousness, but Beck's work is primarily concerned with the impact of shifts in social institutions – for example, marriage and cohabitation (with Beck-Gernsheim, 1995), and, in more recent and ambitious work, globalisation at the most general level and the effect of changes on employment, the welfare state and also political institutions (1999a, 1999b). He is currently engaged with other scholars on a major empirical project which extends the approach holistically, to consider shifts at the level of the nation-state, the sexual division of labour, the nuclear family, the differentiation of social sub-systems in politics, the economy, culture and science and the relationship between expert and lay knowledge (Beck, Bonss and Lau, 2003, 5). Research within the risk society framework on intimacy and personal relationships also continues (for example, Beck-Gernsheim 2002).

Risk society themes have been taken up in the UK by Giddens, who tends to pay greater attention to the impact of cultural changes at the individual level. The key shift among the citizens of risk society is towards what he terms 'reflexivity': individuals are conscious of their social context and their own role as actors within it (1994 42). Managing the risks of civilisation becomes both a pressing issue and one that is brought home to individuals. At the same time however, confidence in experts and in accredited authorities tends to decline as people are more aware of the shortcomings of official decision-makers, the disagreements among scientists and experts and of the range of alternative approaches to problems. The weakening of an established traditional order in the life-course provided by work, marriage, family and community leads to greater individualisation and increased uncertainty and anxiety. In this context, the individualised citizens of 'world risk society' are increasingly conscious of the responsibility to manage the risks they perceive in the context of their own lives, and, in this sense, 'self-create their own biographies' – in other words, continually and iteratively plan and re-plan the course of their own lives.

This leads to greater emphasis on a shift away from received authority and expertise and towards a citizenship of 'active trust', rather than taken-for-granted deference to accredited experts. He follows through the implications of a critical citizenry and a decline in the capacity of nation states to manage the political economy for the political order in the context of the 'Third Way' politics of New Labour in the UK (Giddens, 1998).

It is important to be clear that the notion of individualisation contained in such risk society approaches differs from that of the 'advanced liberal' individualism often identified with the increasing importance of market institutions (for a sophisticated commentary see Rose, 1996). Individualism in risk society is understood not only as negative freedom, loosening the constraints of a tradition-based social order, but also, more positively as enabling individuals to choose in the context of a pluralisation of cultures and a greater diversity of life-styles in which the vast majority of citizens can participate.

The risk society approach has been criticised both theoretically (Lash in Beck, Giddens and Lash, 1994, Boyne, 2003, Lupton, 1999, Elliott, 2002) and on the basis of empirical evidence (Tulloch and Lupton, 2003 132). Two important points concern the status of the risks and uncertainties on which the theory focuses and the processes of social change which underlies the assumed shift to a new modernity. On the first point it is unclear how far risks are to be seen as real and external and thus the drivers of social changes which shape social experience and consciousness, or as social constructions generated by people's understanding of the contexts in which they find themselves. From a naïve perspective, risks as understood by Beck and Giddens seem to share both statuses – the former as external motors of social change (a position reinforced by Beck's emphasis on dramatic examples of new risks associated with technological advance such as environmental pollution or nuclear power generation), the latter as a component in cultural changes shaping assumptions and behaviour in radically new ways. As Alexander points out 'by ignoring the "cultural turn" in social science that has gained increasing force over the last two decades, Beck cuts himself off from the more sophisticated and symbolically mediated discussion of risks undertaken by thinkers like Mary Douglas and Aaron Wildavsky ... his theory reproduces the simplistic propositions about individual action and abstract collective order that inform the caricature of modernity and modernisation theory of postmodern lore' (1996 135).

In more recent work, Beck seeks to resolve this issue by positing a dual status for risks: 'I totally agree [with Bruno Latour, 1995]..the hybrid world we live in and constantly produce is at the same time a matter of cultural perception, moral judgement, politics and technology, which have been constructed in actor networks and have been made hard facts by 'black boxing'' (1999b 146). Later, however, he takes issue with Latour's claim that the features of modern society pointed to in discussion of risk society have in fact been significant throughout the period typically understood as 'modern': 'I disagree..that.. "we have never been modern"…if you take the issue of risk beyond its cultural definition and explore instead the details of the management of risks in modern *institutions* the contemporary paradoxes and dilemmas come to the fore.. the global risk society.. cannot be understood in terms of the pre-modern dangers and threats' (1999b, 151). In other words, there are real changes in the world which have their impact primarily through the way in which they are constructed by social actors in networks.

The issue of the status of risks is bound up with the way in which social action is understood. From Giddens' perspective, the development of risk society releases individuals from traditional deference to the authority of the state, accepted rules governing family life or the authority of experts, in a way that both imposes responsibility and is empowering: 'Giddens…suggest[s] that contemporary actors have gained enormous control…over their selves and their environment by making use of various therapeutic techniques, including science, in the process often becoming experts themselves' (Alexander 1996 135). However this implies a rather simplistic approach to how people understand their social circumstances and their own roles within society. Alexander points out that culture factors impinge at this level, so that, for example, a cultural shift towards greater acceptance of diversity in sexual relationships is not only a context which offers opportunities to people in how they live, but also something which shapes their understanding of who they are and

the range of ways in which they might choose to live: 'this newly-gained reflexivity is deeply connected to meaning making and ..critical action depends on a continued relation to relatively non-contingent, supra-individual cultural forms' (1996 138).

The second issue, concerning the periodisation of social change, follows from this. Rose (1996 321) points out that Beck's claim that 'the prevalence of a language of risk is a consequence of changes in the contemporary existential condition of humans and their world (Beck 1992)' may be misleading. A number of studies (for example, Ewald, 1986) show that risk emerged as a social category and as a concern for government in relation to social insurance as early as the nineteenth century (see also Dingwall, 1999), though Beck might respond that it is the cultural centrality rather than the recognition of risk that is his concern. Further comments develop Alexander's point that the notion of identity and agency is limited: it pays limited attention to social factors and to differences between social groups in its focus on the declining role of established social structures and the importance of personal and active choice. Lash and others stress the significance of culture and of an emotional and aesthetic dimension to life alongside choice in individual action. Others point out that different groups may respond in various ways to the context of late modernity, and that the responsible, confident, self-creating individual may only dominate within a particular social stratum (Rose, 1999, Mythen, 2005, p. 129).

These points have led to a number of developments in research. In principle, it would be possible to explore the linkages between approaches to the cultural construction of risk at the social level in the tradition stemming from Douglas' work with that of Beck at the individual level, but this does not seem to have generated much research (Tulloch and Lupton 2003, 6). In addition, the individualism of the earlier Beck and Giddens' approach to risk society has much in common with the methodological assumptions of psychology, but again this area does not appear to be well-developed. One important approach follows the risk society point that official expertise is increasingly called into question, but develops this in a slightly different direction.

From Giddens' perspective the situation is typically one in which self-confident and active citizens seek to interpret the views of different experts with varying claims to authority. However others have stressed the importance of the vernacular and local expertise available to lay publics and often disregarded by the officially sanctioned establishment. An influential study is Wynne's analysis of the role of lay knowledge among farming communities in the responses of Cumbrian sheep farmers to the claims of government-employed scientists about the impact of radiation from the Chernobyl disaster and more generally in accounts of the risks from agricultural chemicals (1992, 1996). Wynne points out that the farmers felt themselves 'completely controlled by the exercise of scientific interpretation' (1996, 63) but developed a thorough-going scepticism towards the scientists' pronouncements because they became aware of short-comings in the scientists' work. Official science failed to predict the course of the outbreak of radiation in ways which were financially devastating for the farmers. They made mistakes, because they simply did not have the farmers' understanding of sheep behaviour and of local environmental conditions (1996, 65-7). This approach takes seriously the critique of expert claims to superior knowledge, but adds to it the point that in different contexts different knowledges may seem to be more appropriate to different social groups. In some ways it is analogous

to the accounts of the different mental models of different groups developed by psychologists.

A further development has been the detailed examination of the responses of individuals to the kind of general social changes that are seen as constituting the transition to risk society and the charting out of the range of responses to greater uncertainty in the life course. The most influential study from this perspective is by Tulloch and Lupton (2003). This rests on detailed interviews with a small number of individuals in comparable family and life-stage contexts in the UK and Australia. This work is currently at an early stage but does indicate that a variety of responses to the experience of risk society are possible, ranging from an enthusiastic recognition of greater opportunity to blind faith that uncertainties will be resolved, and that risk society theories need to be sensitive to the range of citizen responses. A related stream of work explores responses to specific risks and demonstrates the way in which cultural factors influence how risks in areas like health behaviour (Denscombe, 2001; Hobson-West, 2003) or family life (Lewis, 2001; Hackstaff, 1999) are understood.

3.3. The Governmentality Perspective

Governmentality approaches originate in a different set of insights, drawing initially on the path-breaking work of Foucault (1991). Here the central point is that socio-cultural assumptions as well as the direct exertion of institutional authority or physical compulsion can function as part of the apparatus by which power is exerted within a society (Rose, 1990 ix). Structures of culturally based power can be complex and intersecting, involving axes of faith, gender, employment relations, as well as property, the rule of law, particular democratic traditions and political institutions. They are not necessarily centred on the nation-state. The approach relates to that of political sociology but is much broader in its capacity to include sociocultural structures beyond the level of formal institutions.

Much of the discussion of governmentality draws on Foucault (1977), Donzelot (1979) and others' analyses of the process by which emergent mercantilist nation states from the 17th century onwards developed new techniques for managing their populations and achieving national goals (see Dean, 1999 18-20). These methods initially included demography and categorisation to assess national resources and assist planning. They were transformed into ever more sophisticated systems of ordering, a whole rationality of government which saw its role as including the reviewing, planning, structuring, allocating and regulating of its own population, and developed the use of audit, judicial discipline, economic management and an apparatus of welfare, education, urban planning and redistributive measures directed an enhanced security during the life-course to achieve these ends.

An important strand is the cultivation of particular assumptions about the risks they faced and understandings of their own role in meeting them among the citizens. Dominant cultural assumptions intertwine with and reinforce state authority. Thus the idea of prudence and self-responsibility among the working class, expressed through such institutions as the friendly society and the revolving building society, promoted both political quiescence and the stability needed to ensure steady growth in the latter half of the 19th century (Dean 1999). This was then supplanted by a socialisation of

insurance in the 20th century and the development of the welfare state (Ewald 1986, O'Malley 2000). A number of scholars have traced through these processes in the spheres of medicine and regulation of health (Flynn 2002), policing (Ericson and Haggerty 2002), community policies (Rose 1996), mental health (Rose 2002) and elsewhere. One important strand in governmentality approaches analyses the responses of modern states to the disjunction identified by risk society theorists. Here the argument is that the erosion of the official system of nation state management, securing a stable competitive position externally and rising living standards internally leads to a new governmentality: recent approaches stress much more the limitations of government provision and the importance of self-activity on the part of citizens in relation to managing their own careers, training and health – dramatised by Rose as 'the death of the social' (Dean 1999, 191-2; Rose 1996). Rose develops the point that much current analysis, which is focused predominantly at an individual level (as has been seen in relation to risk society theories) fails to capture the point that this shift is taking place primarily at the cultural level.

One outcome of the emphasis in governmentality literature on the role of cultural assumptions in reinforcing state projects is that governmentality is often interpreted narrowly so that it focuses exclusively on what national governments do. This is particularly clear in recent analyses of 'third way' processes in Europe, where governments face the problem of retreating from social intervention yet directing citizen behaviour to achieve national objectives and solve the problem by promoting a culture of individual responsibility.. Dean's own study starts out from broad definitions ('the conduct of conduct' embracing the 'government of the self', to include such areas as dieting and religious practice (1999 10 and 17), but by the end of the book the emphasis is on 'historically delimited' authoritarian and neo-liberal forms of government (chapters 7 and 8). In principle however, the approach can include a cultural account of all forms of power.

Governmentality perspectives have been criticised as over-reliant on a top-down functionalism that seeks to explain social developments in terms of the exigencies of government and other power-holding institutions, to see people as inherently manipulable and to contain an under-developed account of agency. One direction for development links together the accounts of shifts at the level of political economy with detailed and nuanced analyses of individual behaviours and responses (see, for example, Kemshall's work on young people and perceptions of risks in the context of a more flexible labour market (2002) or Hartley Dean on the changing responses to social security regulation (1999).

3.4. Directions in Sociological Research

To summarise, interest in risk in sociology has generated a great deal of work in recent years, because the issues raised go to the heart of understanding current social developments. All of the three leading approaches argue the significance of cultural issues, although only writers from the governmentality perspective appear to claim that the turn to risk, as a specific way to manage uncertainties, can be understood entirely in cultural terms, typically shaped by a government societal project (Lupton, 1999, ch1). At the risk of over-simplification, the different accounts of culture rest on concerns about risk issues modelled on basic categories of pollution or comparable normative systems, theories about how particular social changes interact with

institutional structures or individual understandings of the context of their lives, and accounts of how the exercise of power generates processes which shape social values and behaviour in different contexts.

The respective strengths of the sociological perspectives are that the approach provides an account of the universality of risk and the widespread contemporary disjunction between expert and lay understanding; the particular recent salience of risk and of pervasive disquiet about trust; and the shift in official approaches towards greater emphasis on social regulation through expectations and assumptions about individual behaviour. The weaknesses are to do with the reliance on general social categories in socio-cultural approaches and on relatively undifferentiated individualised accounts across much of the risk society approach, which fails to do justice to recent work indicating the specificity, complexity and variety of responses to risk in different micro-social contexts; and, in governmentality, on a functionalism which assumes that the demonstration of needs at the macro level explains the development of particular understandings among social agents.

Recent developments have led sociological work towards a more sophisticated understanding of the way in which cultural context influences the apprehension of and response to risk, which takes into account social changes, but also analyses the way in which these changes shape both the understanding of risk and uncertainty and social actors' awareness of themselves and their possibilities for acting in relation to risk. In addition some work is paying greater attention to distinguishing the way social and demographic factors, life-stage or membership of particular groups influences responses in this field.

4. COMPARING AND COMBINING APPROACHES TO RISK

Approaches to risk may be categorised in a number of ways. Two dimensions, concerning ontology and particularity, are probably of most use in bringing out key features in current psychological and sociological work. At an ontological level, different theories carry different implications about the extent to which risks are to be understood as real, as having an independent existence, external to the individuals or social groups who perceive and respond to them, or as constructed, and thus a human product. From the constructionist perspective, understanding of risks may result from processes that operate at an individual level, influencing perceptions or cognition, or, alternatively, from social processes, influenced by cultural factors (see Lupton, 1999, 33-5, Rosa, 2003 50). The realist/constructionist distinction has implications for how the behaviour and responses of actors are to be understood, and in particular how far people are to be seen as passive recipients of information about risks to which they then respond, or as in some sense active in identifying and conceptualising some issues as risks and others as less significant.

At the level of particularlity, the key distinction is between an individualism that sees the bearers of risk perceptions as discrete individual people, so that the understanding of risk and the processes that give rise to it can be analysed at an individual level, and a collectivism that sees them as irreducibly social entities (Renn 2005). In the latter case, risks may be understood as more or less influenced by the cultural assumptions shared across a group. In Figure 1 we construct a two-dimensional model, intended to bring out some features of recent research about risk.

Figure 1 about here

4.1 Realism and Constructionism

Risk theories may be ranged along a continuum from realist through weakly to strongly constructivist. Most technical and scientific theories of risk are categorised as realist in their equation of risks with objectively existing hazards, an approach which implies that it is possible to distinguish between real and imaginary sources of risk. This approach, in principle, privileges expert accounts, although it is always open to the possibility that particular expertise may itself be subject to further expert correction. Cognitive/learning approaches typically fall into this category. They are based on the assumptions that risks are real, and are concerned to analyse the factors that affect how we perceive or misconceive them. Constructionism enters to the extent that social factors may, for example, influence the mental modelling that generates a particular prioritising of risk. Variants that suggest that affect and emotional responses play a role point to a further factor which may influence the way in which risks are constructed. To the extent that the influence of affect on risk assessment is seen as intrinsic, the degree of constructionism becomes stronger. Psychometric approaches start out from an empiricism that is explicitly agnostic on the realism of risk, although a degree of realism is usually in practice assumed (Kasperson et al 2003). As culture and world-view enter the discussion, the construction of risk again becomes more important.

Sociological approaches imply constructionism, since culture plays such a strong role in these accounts. Risk society is seen as weakly constructionist: social change is real and generates real hazards in peoples' lives. Much debate centres on how this perspective is linked with the account of individual and institutional responses, themselves shaped by social factors. Purely socio-cultural approaches involve a much stronger constructivism, in that hazards are re-interpreted as generated by self or other, in-group or out-group, and this is what determines responses to risk. Some of those whose work is influenced by 'risk society' approaches suggest that socio-cultural factors operate within the general model, leading to more emphasis on constructionism (Bauman 1991; Tulloch and Lupton, 2003). The socio-cultural work of Lash and others stresses the centrality of group factors in moral and aesthetic judgements of risk (2000). Finally governmentality approaches posit risks as entirely constructed, the product of social processes which enforce particular power relations (Dean 1999 chapter 9, Lupton, 1999).

4.2 Individual and Social Approaches

Approaches may also be located along the individual-social dimension. Rational action and technical/scientific approaches conceive of risk perception and response in individual terms. Similarly, cognitive heuristics, learning processes, modelling, and above all the influence of affect may lead people to construct particular interpretations of risk. Except in the case of social learning theories, all these factors are seen to operate at an individual level. Variants of psychometry, which include culture as world-view, tend more to place more weight on social factors. Sociological approaches typically rest on collectivist accounts of culture, although risk society models which are currently prominent somewhat moderate the cultural approach in

their emphasis on the individual level in apprehension of and response to risk. This is particularly clear in Gidden's account of citizens, faced with conflicting expert standpoints, actively choosing, as individuals, where to place their trust.

4.3. Possible New Directions in Research

While technical and rational actor models and some varieties of cognitive approaches retain their position as individualist and realist, there is a movement among cognitive and psychometric approaches to pay greater attention to issues which open up rather different perspectives. This emerges through the development of interest in culture and in affect and emotional factors. Other developments, such as the SARF framework, attempt to integrate psychological and more traditionally social approaches. Conversely, on the right half of the chart, there has been greater interest in the cultural and collective transmission of power in the governmentality framework, but, at the same time, the risk society approach includes important realist and individualist elements. Research directions in such large and rapidly developing disciplines as psychology and sociology are too complex to be summarised in one simple movement. However there are indications that important strands in psychology are moving closer to the territory traditionally occupied by sociologists (for example, the interest in culture), while groups in sociology are developing work that approaches some of the traditional areas of interest of psychology, for example, the approach in cultural risk studies which focuses on the link between risk and identity, and the emphasis in risk society theories on the way in which individual choice becomes more significant.

This suggests some interesting possibilities for future research. First there are opportunities to seek stronger links between the two disciplines in empirical analysis. The individualism identified in some variants of risk society opens up possibilities for testing whether the particular directions in the way people understand and respond to risks and opportunities during their life course corresponds to the theoretical assumptions. While examination of shifts over time depends on the availability of appropriate time series data, some of the recent work on expert and institutional trust offers opportunities to consider how far scepticism of official authority is linked to the social reflexivity identified by Giddens and others as inherent in 'risk society'. This approach could build on existing work that identifies various components of trust (for example Renn and Levine, 1991, Metlay 1999).

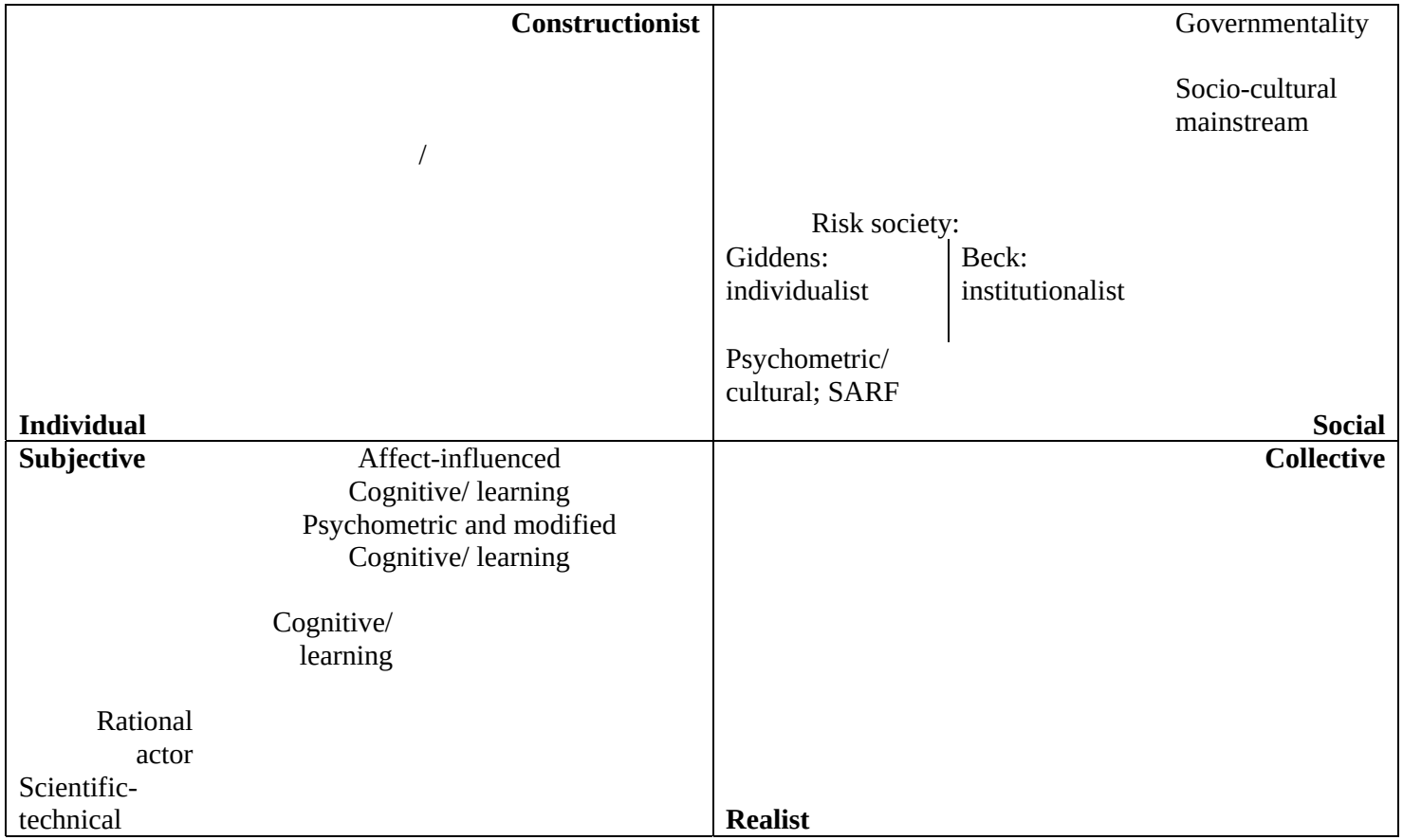
Secondly, useful linkages may be developed at a more theoretical level. The SARF framework and the attempts to operationalise culture in psychological models have already been mentioned. A further area where sociologists might usefully draw on psychological work lies in the field of affect and emotion. A broad theoretical tradition in sociology sees the development of modern society as in general bound up with the domestication and control of emotional drives (see for example, Elias 1994). However this insight is little developed in empirical work. In relation to risk there are suggestive studies of 'edgework' (activities like mountaineering where people deliberately seek risks, for example Lyng 2005) but further work is at present unavailable. Psychological work seeks to provide methods to distinguish the role of affect from that of other factors rigorously. This might contribute usefully to the

testing of some of the arguments about the importance of emotions developed by sociologists.

Thirdly, sociology seeks to provide general answers to questions about whether the ways in which people think about authority and expertise in current society perennially call into question claims based on technical knowledge or accreditation by particular established bodies. This has implications at the practical level for the conduct of public consultations and the role of different forms of knowledge within them, but also raises more basic problems for assumptions about representative democracy. The work based on the risk society perspective has tended to consist of theory-based assertion, detailed and essentially descriptive studies of how people behave in particular contexts or more general qualitative and exploratory work in which large numbers of variables are involved but not systematically examined. Use of experimental and psychometric techniques could support further development in this field, which would offer possibilities for linking across disciplines.

Psychological and sociological approaches to risk have developed rapidly in recent years. One current direction involves greater interest by psychologists in work that places greater emphasis on social and cultural factors and which weakens the realist assumptions about the objects of risk. At the same time, major directions in psychology place more stress on the realism of risk and develop more individualist accounts of risk recognitions and risk responses. Opportunities for closer linkages between the two disciplines are emerging, which may enable development of psychological ideas in the context of the broader and more holistic conceptualisations of sociology, and more rigorous testing of the theories of sociologists, drawing on the methods and conceptual distinctions developed by psychologists.

Fig. 1: Psychological and Sociological Approaches to Risk



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