

No Accounting for Risk

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Abstract

At the present time, the relation between accounting praxis and risk is not well understood. Accounting praxis does not appear to regard the risk it identifies with its activities as being different from “objective risk” – the concept of risk found in positive financial and accounting research. Instead accounting praxis (as reflected in case studies, surveys and other empirical studies) reveal a collection of different, sometimes contradictory, conceptions and ‘taken for granted’ understandings of risk that are invoked and applied on an ad hoc, case by case basis.

The aim of this paper is to demonstrate that the conceptual disarray in accounting for risk is both costly and unnecessary. Taking an interdisciplinary approach to risk research, the authors review developments in risk thinking at the end of the 20th Century and highlight a way forward for accounting through New Paradigm Risk (NPR). Various illustrations and case study examples are drawn upon to reflect the relevance of NPR to accounting praxis.

Key Words: Accounting, Risk, Risk Management, and Research Methodologies

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Introduction

In the past decade or so, an intellectual revolution of sorts has taken place in the study of risk, risk perception and latterly risk management. In interdisciplinary studies of science and social policy, this framework (referred to in this paper as New Paradigm Risk or NPR[1]) has superseded the concepts and ideas known as ‘objective’ risk measurement. NPR emerged out of efforts to synthesise a large body of applied and theoretical research on risk in a wide range of empirical sites conducted by researchers from an equally broad range of social and natural science. At the level of ideas, the change in ideas can be characterised as a movement away from a sophisticated falsification framework that regarded risk as an objective feature of population behaviour to methodological frameworks (e.g. critical realist, postmodernist and post-structuralist) that consider risk perception in its social context. As of yet, however, very little of this research has penetrated academic research in accounting or finance. In both, risk analysis is represented as the study of ‘objective’ risk and attention has been devoted (particularly in Finance) mainly to the development of methods to measure it.

The shift from a framework dominated by the concept of objective risk to one dominated by the concepts related to the social construction of risk perception is profound and carries with it many implications for accounting research. The apparent failure of accounting research to engage with the NPR framework appears to be due mainly to perceptions of theoretical closure on the subject of risk. The early adoption of finance based ‘objective risk’ models by positive accounting research appears to have convinced many that debates about risk are exclusively concerned with increasingly arcane methods for measuring objective risk. But, as we hope to demonstrate in this paper, contemporary research on the social construction of risk perception can be found across a wide range of disciplines (sociology, psychology, culture studies) and practices (insurance, banking, transportation, waste management). These bodies of research offer a rich resource and a powerful alternative discourse on risk to that found in financial economics.

The aim of this paper is to contribute to the development of an accounting research agenda on the subject of risk. To that end, we offer an historically informed overview of the evolution of NPR and consider some of the implications this framework has for research on accounting risk. Our discussion is developed in four sections. In the first, we briefly review the methodological presuppositions required for the concept of ‘objective risk’. In the next section, we offer a detailed overview of the evolution of NPR itself. We identify its main themes, in particular the consensus that a researcher’s methodology, more than anything else, shapes the definition of risk, the interpretation made of individuals’ perception of risk and the understanding of how these perceptions were communicated amongst the relevant actors in organisations and society. In the third section, we map out the research terrain that becomes available once risk, risk perception and risk communication are framed as implicit dimensions of accounting praxis and propose a number of illustrations of how the implications of NPR for

standard accounting research topics. The final section concludes the paper and offers some reflections on current differences between accounting and finance research on the subject of risk.

Section 1: Nature's Evidence And The Ontology Of Risk

“As more and more data was used to produce distributions, a peculiar property was noticed. Whatever the actual data involved, whether it measured animals, humans or plants, the distribution took on a characteristic shape (e.g. Normal or Gaussian distribution)...(whose) most striking feature was its meaning; it is nature's evidence that something is completely random.” (Dunbar, 2000 p.7)

During the 19th century, Victorian naturalists made a conceptual leap that has had far reaching consequences for the methodologies of risk analysis. Instead of seeing plants, animals and people as individuals, they began to study them as populations. In the social sciences a certain range of ‘social facts’ such as suicide, mortality, morbidity could now be collated, and the resulting distribution would make the behaviour of the population visible as an aggregate quanta of social action, susceptible to rational scientific analysis. Social actions made visible by social sciences for example, international suicide rates, geographic or regional variations in child death rates, randomness in financial markets came to be regarded as an objective basis for social policy.

It is a short step from describing the distribution of outcomes in a constructed ‘population’ (death, suicide, prices) to the belief that deviation of a constructed population's distribution from the normal distribution is, to paraphrase Dunbar (2000, supra), nature's evidence that something is not completely random. If scientists observe patterns in populations that are not random, then it is permissible to infer that something produced the anomaly. For example, it was observed that in Glasgow cholera victims were not randomly distributed throughout the city's population. They tended to be clustered in riverside districts of the city implying that living near the river put residents more at risk than other Glaswegians. This social fact implied that a solution to the appalling death rate from cholera could be found by examining some of the characteristics that differentiated Glaswegian riverside dwellers and other Glaswegians, for example, poverty, poor hygiene, social habit or polluted water sources [2]. Once the cause of this social fact was identified, the search for solutions could begin.

From the point of view of modern social theory, this conceptual leap had, ontologically speaking, far reaching consequences. A fault line emerged in realist social theories, between those, like Malthus, Comte and Durkheim, who regard population behaviour as having the same ontological status as individual behaviour (e.g. real and independent of each other so that society is not the ‘sum of its parts’ but an entity that exists outside of and independent of individual social actors) and those, like Weber and Marx, who regard population as a concept or idea rather than a ‘real social actors’. (Potter, 2000; Gould, 1980) For those who regard population as a social actor, it is possible, necessary and useful to speak of population behaviour. For those regarding population as an idea or concept, it is not sensible to attribute an independent existence to concepts, thus

populations are not social actors whereas individuals in social relational fields are. (Gould, 1980)

The second consequence of the Victorian leap was even more far reaching for the study of risk. Because the objects of scientific study were populations, this implied that any techniques used to describe populations could be effectively applied to all populations (plants, animals, people, prices, microbes, and risks). Diverse populations were described in terms of the distribution of various measurable characteristics of individual members (the weight of dogs, the height of plants, the motion of particles, price movements, death rates, accident rates). Risk began to be associated with the objective features of populations of events rather than an attribute of social relations. Risk scientists searched for non-random patterns in the data on accidents and disease as the prelude to interventions intended to manage them at a population level. The social or cultural contexts of these diseases or 'preventable accidents' were ignored as they were not susceptible to the established protocols of measurement. The people who experienced the diseases or accidents, what they knew and understood about these risks, and how they communicated their understandings were more or less ignored in the search for methods to measure the likelihood of risky events. Nonetheless alternate perspectives on risk found their way into the social scientific literature throughout the twentieth century. These shifted the focus of risk assessment from measures of objective risk (e.g. the analysis of populations) to inquiries into the social bases of risk perception and to individual behaviour toward risk in its social and cultural context.

A watershed in this latter type of research was reached in the 1980's when the UK Royal Society commissioned research on risk that brought together for the first time experts from science and the social sciences (Royal Society 1992). The social scientists brought a range of new perspectives to the understanding of risks, largely questioning the statistical capture of the subject. One subject attracting attention was catastrophic risk. A catastrophe, such as damage to nuclear power station or a pandemic, is, by definition, an unruly event. To describe it as a part of a population of outcomes misses the point. Large-scale adverse events are, on the surface of things, possibilities that go beyond mere risk; they are hazards that all would seek to avoid. Social scientists re-introduced the human and the social into risk management, shifting the focus of risk management strategies. It was recognised that where risk avoidance was possible it depended less on technology than on the social context in which technologies were managed and in which risk was framed and communicated.

In the course of the next decade, the Royal Society's commission brought into being a steady stream of research whose common theme was that risk needed to be defined or understood in its social context. Risky behaviour reflected the decisions of individuals taken in light of the social and cultural context in which the individuals lived.

Section 2: When You Just Don't Know: Epistemology And Risk

“...time forks perpetually towards innumerable futures. In one of them I am not your enemy.”(Jorge Luis Borges, “The Garden of Forking Paths” cited by Dunbar 2000:67)

It is generally acknowledged that the arrow of time points in one direction, from past to present to future. What has been done, cannot be undone. The future, however, is different. The future is not only perpetual motion in the mind of innumerable possible outcomes, but, in principle, is open ended and therefore 'unknown'. In other words, under any and all scientific and social scientific methodologies, a forecast is understood to be a mental construct, a speculation that cannot affect the course of events in the past per se, only the interpretation of it, whatever the ontological status we assign to the past [3]. Since a forecast is an idea about what might exist rather than an observation statement about what does exist, positivist methodologies face certain difficulties. The fact that one constructs the distribution of past outcomes on the basis of a positivist epistemology does not imply 'positive' knowledge of the distribution of future outcomes. The latter is logically impossible. Positive knowledge claims rest on a realist ontology (we observe what exists 'out there' independent of our thinking of it). Forecasts of the future, however, must be acknowledged to be subjective and therefore cannot be said to 'exist' 'out there independent of thought.

What is required is either some arguments to the effect that predicted 'events' can be treated as 'real' so long as they are based on that the distribution of real events in the past. If one could dispense with the arrow of time (e.g. the 'realist' ontology's requirement of irreversibility of time) and focus on epistemological difference between certain knowledge and probabilistic knowledge of events. Thus forecasted events differ from past events along an epistemological continuum rather than an ontological divide. The distribution of the population of past events known with certainty can be assumed to be the distribution of future events. Uncommon events in the past are to be regarded as unlikely to occur in the future. If past event population distributions are 'gaussian' or 'normal' distributions, the future is well behaved. The mean outcome is the likely outcome in future. Risk can be conceptualised as standard deviations from the mean or 'variance'.

The concept of risk as 'variance' is quite different from a laypersons usage of the term. Variance implies no particular bad and no particular good. It simply refers to a measure of the possibility of being 'surprised'. By way of contrast, the layperson could be said to reserve the term risk for surprises of a 'bad' or adverse nature and implies a view that times arrow cannot be overcome with language games, no matter how sophisticated. Risk definition and risk perception arise precisely because one doesn't know what will happen in the future, even if one imagines the future might be pretty much like the past.

In the remainder of this section, we discuss the risk framework that emerged in the 1980's when the risk definition and risk perception of laypersons were taken seriously. We argue that NPR emerged from a kind of intellectual collision between the epistemological 'end run' contrived by positivism discussed above and the results of scientific study of human behaviour towards unknown future outcomes. In that collision, a new approach to risk analysis emerged, one which placed risk in a social context and proposed greater attention to how the methodologies adopted for studying risk shaped risk definition and risk perception.

The Uncongenial Twins: Risk And Risk Perception

As argued above, risk assessment, definition and measurement [4] were the domain of positivistic methodologies. Future outcomes were defined with reference to patterns observed in experiments involving plants, animals, molecules and records of human behaviour (death, birth, health, etc.). Following such principles, risk definition centred on the 'probability' or likelihood of a risk outcome occurring and subject to quantitative linear evaluation. The dominant definitions of risk were founded upon assumptions of linearity within determinate systems. This framework was upheld within the social as well as natural sciences. A primary distinction emerged between objective risk and risk perception or subjective interpretations of it.

These early studies of individual risk perception centred on a psychological evaluation of individual knowledge construction. These studies have been extensively replicated and extended within engineering accounts to explain how individuals rely on cognitive heuristics and mental rules of thumb for decision-making [5]. For example, Tversky and Kahneman's work on 'availability heuristics' denoted an individual's judgement of probability by their ability to recall or imagine a probable event (Tversky and Kahneman, 1973).

As empirical evidence of risk perception and behaviour accumulated, psychometric and social psychological investigations came to support the view that a purely psychological, individual based analysis can account for only part of risk perception and risk behaviour (Fischhoff et al., 1981; Kahneman et al., 1981; Kahneman et al., 1982; Heimer, 1988). In addition, research studies of individual perceptions of risk came under criticism from researchers in the fields of anthropology and sociology for their inability to account for motivational and emotional explanations for risk taking behaviour (Fessenden-Raden et al., 1987)

While many within the social sciences raised challenges to such 'positive' distinctions of risk perception, it was not until the 1980's that a new framework for risk evolved. The Royal Society brought together scientists and social scientists to debate the issue of risk. Research addressed such as catastrophes and other unbearable surprises that preoccupied societies, such as nuclear war. Scientists and social scientists explored theories of chaos and complexity [6] that directly challenged positivist scientific authority as a credible basis for risk assessment.

Objective quantitative evaluation of risk was challenged by emerging intellectual frameworks that placed risk in a social context and studied subjective assessment of 'possibilities' based on principles of non-linearity and uncertainty. Risks were conceptualised as components of increasingly complex systems in which accidents will occur and thereby as a movement away from perceiving risk as a product of isolated human error within controllable mechanistic systems [7] (Reason, 1990). In response, risk research has expanded beyond essentialist explanations for human response to risk towards one that allows for plural 'rationalities'.

The next developments were characterised by a shift from describing these rationalities to making sense of the processes by which they were formed. Thus, social theories of risk emerged which queried the role that human conceptions-- reproduced in scientific

discourses--may play in risk perception. It was recognised that the perceiver of risk is rarely an isolated individual but a social being lives and works within a network of informal and formal relationships. Such relationships are manifest in a wide range of both small and large-scale social and institutional arrangements within and across societies (Rayner, 1986). Risk definition began to be considered something related to how individuals' view the world and how such views come to be constructed. These strands of theorising converged into a consensus that the traditional distinction between objective and subjective or perceived risk could not be sustained. As a result, separating objective and subjective risk came to be regarded as epistemologically primitive and is no longer considered to be a mainstream proposition [8].

It is now agreed that the choice of a linear evaluation method is, in itself, an assumption or prior judgement regarding the nature of risk perception. When defining risk, emphasis is now placed on recognising the social context within which scientific information is deemed to be useful or valuable. Examples of good science or bad science were highlighted following an assessment of the methodological foundations and assumptions from which scientific research had been undertaken and how well limitations had been communicated. Particular emphasis is now placed on recognising the social context of risk perception (Wynne and Mayer, 1993).

It is noteworthy that in the philosophy of science, a post positivist methodology emerged, self-described as 'critical realism' (c.f., Bhaskar (1999). The 'critical realists' focus on relations rather than 'events' and moral or scientific realism concerns itself with the nature of the object (e.g. its ontological status) rather than with a falsification emphasis on the problematic of knowledge (e.g. epistemology) (Potter, 2000:200). With respect to risk, a critical realist approach would begin with such questions as: What must 'risk' be like, if one is to make the observed activity of risk management 'intelligible'? Or, what must 'reality' be like in order for risk management activities to make sense?

This reframing of the risk problematic follows from the epistemological caution about scientific knowledge that critical realism advises. Caution is required if for no other reasons than that many dimensions of reality are intentionally excluded from stereotypical controlled experiments. Therefore, it ought to be admitted that whatever might have been excluded is still 'out there' and laypersons may have knowledge of it that is useful. As a result, scientists and experts must be seen to have only a partial knowledge of 'how it is' and whatever we 'leave out' always has the potential to surprise us. Moreover, distinctions between scientific and everyday knowledge production are artificial and potentially misleading if they ignore the social context in which each is produced.

The Social Construction Of Risk Perception: Reflecting On Modernity

As noted above, an integrated approach to risk perception developed in which the individual is considered as part of social, cultural, institutional and political processes. Examining the social construction of risk, the research focus shifted discussion to the individual in their social context. An individual's attitude is viewed as being shaped by the extent to which he or she is incorporated into a bounded group and the extent to which social relationships are conducted according to rules rather than ad hoc

negotiations (Thompson et al., 1990; Krimsky and Golding (eds.) 1992). This shift in the focus of investigation required a reworking of the concept of knowledge construction. Thus, in examining the construction of risk, particular attention was devoted to providing a general theory of the social construction of knowledge analogous to the 'grand theory' projects of the 19th century.

An important catalyst for social theorising on risk has been the work of German sociologist Ulrich Beck (Beck, 1986, translation into English, 1992). Beck proposed that society had entered a phase of 'reflexive modernity' in which real physical-biological dangers have been extended beyond the limits of calculability contained within conventional modernist systems of prediction and control. In reaction to this, Beck provides that a process of individualisation has/is taking place with social agents becoming ever more free from the normative expectations of social institutions. Subsequently epistemic authority becomes removed from groups of scientists, politicians and industrialists and fragmented across a huge range of social groups interacting and establishing a new means of self-critique. Beck emphasises that his is not a critical theory of society but a theory of critical society, critique is endemic to the risk society.

Taking modernist views as their starting point, some theorists are attempting to move well beyond the view that risk exists as a "material substrate of the social defined by scientific enquiry". Writers such as Lash, Bronislaw and Wynne (Lash et al., 1996,p 1) have challenged Beck's position on reflexive modernity by privileging hermeneutic truths of lay actors over the propositional truths of scientists. Drawing on his extensive research into the 'sociology of science' Wynne further proposes a need to go beyond the strict division between 'propositional' scientific and 'formulaic' lay knowledge (Wynne and Mayer, 1993; Wynne, 1996). He argues that the notion of modernity itself is highly problematic. According to Wynne, we have never been modern in the way that is claimed; rather the ontology of scientific knowledge itself is pervaded with an indeterminate and formulaic set of communications and practices. Accordingly, scientific knowledge produces unanticipated consequence and knowledge itself is indeterminate and uncertain. Wynne proposes a moral realism in which public reactions to technocratic projects resist the imposition of inadequate models that create not physical but 'identity' risks and increase reflexivity (Wynne,1992; 1996).

Post-structuralists have put forward a similar argument. They have argued that natural meaning arises from interpreting signs in nature and the world. Post structuralists argue that language, cultural meaning and the 'order of things' are part of a world in which social practices and nature are interwoven, interpreted and 'ever already given'. Post structuralist research concentrates on exploring perception as a determinant of what is rational and hence managed. Post structuralist thinking on risk, reflected by Jackson and Carter, highlighted the view that the minimisation of risk (through increasingly rational behaviour) is an unattainable goal under conditions of indeterminacy (Carter and Jackson, 1992; Lash et al., 1996).

This implies that an examination of the interface between risk communication and risk perception serves at least two purposes. Firstly, it provides additional theoretical reasoning in support of a social constructionist perspective on risk perception. Secondly,

it illustrates the potential practical application of such theorising. A common principle shared by these social theorists, and highlighted by Wynne, is recognition that expert definitions incorporate implicit assumptions about the social and institutional processes of risk management. This places emphasis on interpreting the different aspects of risk and rationality that are expressed to aid understanding rather than on seeking to demonstrate that any particular framework is more accurate.

Risk Interpretation And The Social

“The causal role played by the participants thinking has no counterpart in the phenomena studied by natural scientists. It is obviously not the only force shaping the course of events, but it is a force that is unique to events that have thinking participants. Hence it deserves to take centre stage.” (Soros, 1987,p40)

Following social constructionist principles, a stream of theorists has modelled risk interpretation according to recognised systems of meaning and ways of life shared by members of a particular culture. These cultural theorists have illuminated a world of pluralistic rationality, discerning order and pattern in risk taking behaviour and the beliefs and biases that underpin it. Cultural theorists, proposing that no complete theory of risk exists, have applied cultural principles to analyse the difference premises from which decisions are made (Holling, 1979; Douglas and Wildavsky, 1982; Jasanoff, 1986; Rayner, 1986; James and Thompson, 1989; Thompson,et. al., 1990; Adams, 1995).

Given the theoretical foundations of cultural theories it is unsurprising to find that a myriad of definitions of culture have been proposed. However, cultural theorists have often been criticised for adopting the logic of functional explanation. Functionalists rely on theories in which the consequences of some behaviour or social arrangement are essential elements of the causes of that behaviour. It is noted that if function centred explanation is found to be defective, in principle, cultural theories will collapse. A major criticism of functional explanations is the lack of precise definition of boundaries and conditions for the survival adjustment or adaptation of the cultural system under examination.

Thompson et al. (1990) has argued that abuses of functional theory arise when theorists attach functions to society as a whole. Critics rightfully proposed that such functionalist explanations were vulnerable to the charge of positing an illegitimate teleology. An illegitimate teleology is said to be present when it is presumed that social processes and structures come into existence and operate to meet goals, without being able to document the causal sequences whereby goal attainment creates and regulates these structures and processes involved in their attainment.

It may be posited that to move from the system maintaining consequence of a behaviour to the cause of that behaviour presupposes the existence of a ‘group mind’. Through Cultural Theory, Thompson et al. (1990) demonstrate not only how a behavioural patterns may sustain a social system but also how that system maintaining consequence, in turn, will sustain the behaviour pattern, without having to invoke anything resembling a group mind. Thompson et al. argued that breaking down societies into

their constituent ways of life and tying risk perception to social functions, rehabilitates a functional explanation of observed behaviour toward risk according to alternative ways of life.

Despite the acclaim received by Douglas and Thompson et al., a basic problem recognised in culture theories is the classification of existing social units and of risk perception in terms of the cultural types. This, it is argued, may over simplify more complex shades of social differences (Johnson and Covello, 1987; Royal Society, 1992). Further, empirically testing the broad characterisations developed by cultural theorists may be problematic due to the inherently abstract and complex nature of the models. In light of such criticisms it is not surprising to find that discussions of cultural construction of risk have been centred predominantly on devising formulations of the social construction of risk perception with little empirical application (Thompson et al., 1990).

Commenting on these works, Adams (1995) notes that culture by its nature cannot be framed as a statistically testable hypothesis. He extends culture theory, proposing a practical theory of risk compensation. This is based on a finer grained model of behaviour toward risk, what Adams calls the 'risk thermostat model'. He argues that in the "real interactive world of risk management, where the purpose of measurement or estimation is to provide information to guide behaviour, risk (representations and related decisions) will be contingent on behavioural responses, which will be contingent on perceived risk" (Adams, 1995:30). He views this balancing behaviour as analogous to a thermostatically controlled system in which the setting of the thermostat varies between individuals, groups and cultures. Adam places importance on understanding how and why the balancing act is done and argues that understanding these motivations and actions is essential for efforts to interpret the type of risk management information produced and the decisions made in light of it.

Of particular pertinence is how risk management information is produced, the role of expert opinion in the interpretation of risk and the actions that result. Adams (1995) for example, raises important questions about the social construction and reinforcement of 'expert' opinion. Indeed, most contemporary social theorists now accept that the influence of political power and negotiations should be recognised as a primary factor supporting the social construction of perception within and between societies, cultures, institutions and organisations. This consensus points to a dominant rationality for risk perception and management within a given group and the basis on which others may understand and critically examine such knowledge-power forces and frameworks. It implies the existence of a dense network of communication relays stretching across social representative governments, organisations and groups. It is this nexus of communication that establishes the nature and scope of political debate and the acceptance (or not) of plural rationalities for risk definitions and subsequent management.

Risk Communication In Its Organisational And Social Context

At the centre of efforts to apply social theories to risk determination is the risk communication mechanism inherent within the group, organisation or culture. It is proposed that observations of group perception and rationality hold direct policy

implications both for formal risk communication and risk management decisions (Collingridge and Reeve, 1986; Jasanoff, 1986; Dietz and Rycroft, 1987; Otway and Wynne, 1989). Concentrating on risk communication additionally allows for some degree of integration between the fragmented categorisation of risk causation and subsequent risk definition at a practical level (Irwin, 1985; O’Riordan, 1986; Brown, 1989; Burton et al., 1993;).

Research issues and concerns at the interface of risk perception and risk communication have been three-fold: the different conceptual approaches that are taken to risk communication to support the social construction of risk; the particular roles of policy [9] development and communication in influencing risk perceptions; and normative guidance on effective risk communication highlighting the role of trust.

Different approaches to risk communication have been recognised primarily according to divergent views on knowledge construction. Risk communication, in terms of policy development, has been viewed as encouraging a particular behaviour, guarding against an immediate risk, or illustrating the varied perceptions and frames of reference that different parties may bring to disputes. Hence, it is proposed that fostering appropriate forms of communication between the defined parties of risk perception and management may lead to acceptability of risk bias and contribute in some way to mutual understanding and resolution of disputes (Lee, 1986; Fessenden-Raden et al., 1987).

Examining conceptual frameworks for the social construction of risk at a macro level, attention has been centred on governmental policy making for a given society and associated regulation. Discussions have centred on the need to establish acceptable, or tolerable, and unacceptable risk level for issues of social safety. The question of voluntary and involuntary risk exposure was also raised by these studies and has been considered as an additional question for government policy makers.

In terms of risk communication and risk perception researchers have sought to provide practical advice to risk managers, particularly at an organisational level. The value of reflecting on mental model approaches in order to understand the skills needed to solve specific problems or operate a specialised piece of equipment has been highlighted as a basis for establishing appropriate risk communication mechanisms (Wynne and Mayer, 1993; Beck et al. 1994; Lash 1994; Lash et al., 1996).

An issue common to risk communication has been the importance placed on ‘trust’ in achieving effective communication and influencing the social construction of risk. Emphasis has been placed on the effect of risk communication on perception in terms of the trust placed in the communicator. The establishment of trust has been considered with respect to establishing and understanding the ‘social rationality’ of the risk communicator and risk perceiver, reflecting on a debate centred on the influence of political power and the relative value of expert and lay opinion. (Wynne, 1980; Lee, 1986)

As we have outlined, NPR emerged out of efforts to synthesise a large body of applied and theoretical research on risk in a wide range of empirical sites conducted by researchers from an equally broad range of social and natural sciences. What came to

light was the profound influence of the adopted research methodology on how the problematic of risk was framed; a consensus emerged that it was the researchers methodology, more than anything else, that drove the definition of risk, the interpretation made of individuals' perception of risk and the understanding of how these perceptions were communicated amongst the relevant actors in organisations and society.

Section 3: Making Risk Visible in Accounting Research

On the surface of things, we expect our characterisation of the development of NPR to resonate powerfully with the experiences of the critical and interdisciplinary accounting research community. Over the past decades, the importance of methodology to the framing of problematics in accounting [10] has been explored extensively. Indeed, these reflections are regarded as constituting the central difference between critical and mainstream accounting research [11].

However, as of yet, awareness of parallel developments in the risk research community is not in evidence in critical accounting research and the opportunity to develop research on accounting and risk has not yet been grasped. The aim of this section is to map out the research terrain that becomes available once risk, risk perception and risk communication are framed as implicit dimensions of accounting praxis. To illustrate what we mean by this, we propose a number of illustrations of how the NPR perspective brings to light certain risk problematics associated with common issues in accounting research.

The Case of Management Accounting and Control

It seems obvious to us that an implied risk problematic has always pervaded accounting practice. One illustration of the presence of an implicit risk problematic is found in the claims made for accounting information systems. These, textbooks claim, provide an essential technology of 'control', creating the information required to 'pilot' or navigate the firm through the choppy waters of the capitalist market economy. However, control would not be valuable if organisations operated in an environment in which the organisation traversed dedicated, known channels. Instead, the 'anarchy of production' and the 'gales of creative destruction' are considered virtues of the capitalist market environment because they ensure that only the fittest (most efficient and effective) organisations will survive [12]. An essential test of the fitness of the firm's managers, therefore, is their ability to pilot the firm through the hazardous waters and shark filled reefs of global competition. Hyperbole aside, the material point is this: Control systems are said to be valuable because they claim to be a technology to 'manage' the pervasive risks arising from the uncertain (even indeterminate) future produced or generated by the self same capitalist market processes from which they may or may not profit.

In standard management control praxis, this implied risk problematic is just that: implied and thereby 'taken for granted'. The social contexts in which 'control' is attempted are rarely problematised. This much has been pointed out by critical accounting research. Indeed, the standard concepts of control and management have been an essential focus of methodological reflection in critical accounting research. Many important conceptual advances were made in these efforts (e.g. Tinker, Merino

and Neimark, 1982; Neimark and Tinker, 1986; Boland, 1989; Cooper and Hopper, eds., 1990, Macintosh and Scapens, 1990, Puxty, 1993) and a significant number have even penetrated mainstream accounting research, a not insignificant success considering the enormous methodological divide between positive and critical accounting research.

Having said that, however, it must be admitted that neither the 'new' management control literature nor its methodological critics have considered risk as a dimension of the problem. Debate as to the nature and scope of the 'risk' arising from 'control' loss and its relation to the ontology of uncertainty or indeterminacy remain steadfastly out with the core debates in management accounting. For example, for some time now, the external audit has been represented as a check of internal control systems and since NPR would expect the auditor to have a different perception of 'risks' to their independence than those of the regulators, it would seem timely to explore the social construction of risk perception amongst the various stakeholders. In a sense, one might extend research on the audit society by considering the implicit risk problematic that the audit process claims to resolve.

Critical accounting researchers have an advantage to support their engagement in the risk debate because of their ongoing methodological discourse on issues of control, trust and blame. For example accounting technologies, institutions and practices can be considered as part of the complex assemblage of political communications within an organisation that shapes the recognition of a range of risk perceptions through which decisions about risks are explained and constitute the social interface between risk communication and risk perception.

Prior research argues that accounting reports are a significant media in the communication and legitimisation of management's views on business risk and are a central factor in setting the parameters of the perceptual field in which analysts, fund managers, employees and others frame their own perception of business risk. Some prior research on accounting disclosure could be seen as criticising the adequacy of this risk construction process. Tinker (1986) documented the terrible social and health consequences that may ensue when there are systemic distortions in the accounts.

NPR creates new theoretical and policy spaces for problematising the adequacy of financial reporting. For example, one can raise the following questions of any annual report. Is the accounting given premised on the significant distortion of risk perceptions regarding hazards held (and known to be held) by the company's employees or by members of the community? Does the accounting given rely on the assumption that it will be possible to shift risks from one dimension to another or from one social group to another? From a NPR perspective there are a large number of possible hazards and risks that are properly the remit of accounting but many appear to be ignored in accounting practices. It can be argued that there are valid dangers and hazards associated with contemporary practices that offer only a partial or even partisan accounting for risk

The Case of Auditor Independence

A risk problematic is also inherent in auditing practice and the commercial behaviour of large 'public accounting' firms. Firstly, risk, in the context of large auditing firms, is

multi-dimensional, interrelated and complex. Indeed contemporary research observations on large auditing firm practices can be described in the language of risk transference. The audit function itself can be seen as a risk management process, in that it is designed to reduce the risk of poor quality information to users of accounts. Auditors themselves have to 'take risks' in the process of conducting audits including such matters as deciding when sufficient testing has been completed in order to feel comfortable with offering an opinion. Auditors are well aware of the risk of damaging their reputation when the audit process is seen to go wrong. However, there are considerable rewards associated with auditing risky companies as these are likely to require more extensive audits and the associated higher fees. This suggests that rather than being risk averse, auditors are always in the position of having to make a series of risk return trade-offs.

This particular version of individual auditor risk perception gives way once one considers the complexities arising when the decision to take or refuse an audit engagement is made not by an individual but by a large firm. Large auditing firms may consider not only the risk reward trade-off associated with an audit engagement but also with the potential rewards that might become available, such as opportunities to cross sell other services such as management consultancy. It is willing to take chances they previously would have been reluctant to take. This largely shifts the risk back to those who rely on accounting information. In the recent US SEC hearings on this subject, Bazerman, a psychology researcher at the Harvard Business School, testified that when audit firms are investing in an audit client, or can profit from consulting or even if they are hoping to be rehired as an auditor, it is "psychologically impossible for them to be independent." (Economist, 18-14 Nov., 2000;142).

Regulatory intervention also appears to have little effect on the risk taking propensities of audit firms. Indeed, according to one widely respected observer of the firms, the response of auditors has not been to demand regulatory safeguards of their independence but to strenuously oppose them. (Financial Times, November 21, 2000,) It is suggested that some auditors are willing to risk their 'reputational capital' as independent professionals for commercial and professional gain. The value of the expertise of the auditor is related to the complexity of audit contracts. The more complex the audit, the greater is the likelihood of audit failure. The greater the likelihood of audit failure, the greater is the potential liability of the auditor and the greater is the risk to the auditors' reputation. In these situations businesses are more likely to want to use the services of the large accounting firms as a quality assurance symbolic action. However, the large audit partnerships appear to be quite willing to take these risks in order to gain lucrative management advisory contracts from their audit clients. (Ciancanelli and Pastra, 2000) Audit firms continue to argue in various media that the sale of management advisory services poses no risk to their professional independence even though this claim has been challenged directly by government regulators.

Conceptual Framework and the Perception of Accounting Risk

That one's prior conceptual framework affects risk perception is one of the main results of NPR research. Thomson (2000) conducted a pilot study to determine the effects of studying NPR on students' perception of accounting and risk. All the subjects of the

study were members of a new class titled 'Accounting and Risk'. As part of the required assessed work, these thirty final year (honours) accounting students had to prepare a structured review of each chapter of the class text, Risk (Adams, 1995). The text provides an accessible overview summary of NPR research, mainly focussed on science related policy research. In writing up their reviews, students were required to identify points in the text that they agreed with, points they disagreed with, a summary of the key issues they regarded as relevant to accountancy practices and their views on the implications of NPR for the accountancy profession. The latter commentary was to reflect their participation in structured small group discussion in which students were asked to consider the implications of NPR for different actors in the accounting process, e.g. financial accountants, auditors, management accountants, financial regulators, stakeholders. The students' reviews were coded and then examined thematically. The results indicate that alternate conceptions of risk produce strong difference in the characterisation of actors in the accounting process. Table 1 below summarised some of the changes in perception that occurred.

Table 1 Students beliefs/perception of Accountancy from differing risk perspective

Old Paradigm Risk	New Paradigm Risk
<p>Accountancy profession should be modelled on zero-risk man, (human prudens) who assume that all relevant stakeholders share this risk reduction goal</p> <p>Accountants are perceived to be ‘objective’ risk experts who do not want accidents or mistakes in their financial reports/analysis</p> <p>Accountants are part of the formal risk-reduction industry, reducing others risk from misleading information and providing quality financial data to support rational decision-making.</p> <p>Accountants are considered well-informed and trustworthy who possess superior wisdom about the nature of risks and how to manage them and can be relied upon to advise on how to displace risks</p> <p>Accountants are risk reduction agents for stakeholders who will modify their behaviour of stakeholders based on accounting information</p> <p>Accountants prefer to base their activities on traditional, objective scientific information, using research data to base decisions and reduce risks through research, training and education.</p>	<p>Accountants are not homo prudens, they want to take risks and prefer flexible standards</p> <p>Accountants feel that they should override standards when they believe they have superior knowledge and expertise than regulators</p> <p>As professional experts they want freedom to make personal judgements, regulations suppress risk and subjectivity, but problems can emerge as accountants strive for greater risk taking</p> <p>The accounting risk-world is an interactive risk dance between financial accountants, management, auditors, regulators, professional institutes and stakeholder groupings.</p> <p>Accountants are protected from risk exposure by accounting standards, audit process, indemnity insurance, and existence of professional bodies and clients behaviour. Accountants cannot act as if everyone is zero-risk oriented; stakeholders may want arousal or excitement. Accountants can be seen to be guilty of underestimating risks and over-prudence</p> <p>Accountants do not operate in an objective world</p>

We can summarise the result as follows: Students considered NPR a more useful framework for understanding accounting than the framework of “objective risk”. They appear to regard NPR as more “realistic” by which they meant more closely conforming to the image of accounting formed in prior classes. NPR seems to have provided a general framework for interpreting a range of issues raised in previous studies. Thus the students concluded that because accounting decisions and judgements can make or

break a company, perhaps it ought to be regarded as a risky activity rather than a risk management activity. And if one takes the view that accounting itself has the potential to generate risks, then research on the audit expectations gap might be advanced by considering in greater depth the possibility that regulatory intervention may have quite limited capacity to reduce accounting risk but, instead, amplify pre-existing tendencies in accounting practices to shift risk (e.g. risk migration). Moreover, it may be wrong to assume that stakeholders ought to be characterised as having a homogeneous perception of accounting. Some groups in society might wish to reduce risk or hold contradictory conceptions of 'true and fair' because of contradictory perceptions of risk itself.

Alternatively, it may prove to be the case that professional 'subjective' judgement may actually be superior to statistical risk management techniques in as much as the quantitative reduction required by statistical methods has been shown in other contexts to have the potential to distort or misrepresent the situation confronting organisations. For example, accounting risk may be conflated with susceptibility to financial fraud but as suggested in environmental accounting research, there may be un-priced but costly damage to human health and safety arising from the use of generally accepted accounting practices by an organisation.

The implication is strong that even if accounting is regarded as part of the risk-management or risk-reduction industry, this should not be seen to imply that accounting (or any other technical practices) is capable of providing an objective means of measuring risk. The actions of actors in the accounting process will inevitably depend upon the reactions of others in organisational life and it is perhaps more realistic or sensible for organisation actors to appreciate that in measuring risk accountants influence the perception and communication of risk. Moreover, techniques used by accountants are inevitably subject to either criticism or support from different cultural groupings in organisational life. Thus, to some extent, it may be more realistic to assume that accounting systems play a part in constructing the risk problems to which other stakeholders are subject and that they will engage in actions to compensate for such perceived risks, perhaps by shifting it onto other stakeholders in the organisation.

The above elaboration of results from the pilot study is meant only to illustrate the potential of research in this area. What we have sought to in the above is offer some support for the argument that systematic study of NPR may have the potential to change how accounting risk is framed and to affect how the behaviour of accountancy actors is framed. The students reported on here appear to have found NPR useful in making sense of the gaps between the rationality claimed for accounting techniques and empirical or case studies pointing to the importance of the social in shaping accounting praxis.

Accounting Risk and Current Policy Debates

The most prominent focus of management research on the topic of risk has been the formulation of policy and procedures [13] for risk management. Concepts of risk communication, in terms of policy development, have been viewed as encouraging particular behaviour, as guarding against an immediate risk, or as illustrating the varied perceptions and frames of reference that different parties may bring to disputes. It is proposed that fostering appropriate forms of communication between the defined parties

of risk perception and management may lead to the acceptability of risk bias and contribute in some way to mutual understanding and resolution of disputes. This approach is pertinent for accounting praxis given its formal role in policy-making and policy enforcement in commercial and public sector organisations. Accounting is extensively involved in the formulation of regulations and their enforcement (e.g. accounting ratios are used to determine whether a company is insolvent and therefore subject to restrictions on its operations).

Examining regulatory frameworks for their implied risk rationalities at a macro level can provide useful insights into the processes by which certain risk frameworks are privileged. Regulatory frameworks again play an important role in framing individual and cultural groups risk perception. Particularly interesting is to consider the diversity of opinion on what are acceptable or unacceptable risks within a society. Accountants are often perceived to be risk experts and are consulted in connection with regulatory plans. This role of accountancy in framing regulatory risk has only been partially researched and is an area requiring further research.

We have pointed to the shift in emphasis from the 'objective facts' of risk determination' an understanding of risk 'perceptions' in its social context. For example the UK Health and Safety Executive used the phrase as 'As Low As is Reasonably Practical' in policy debates to establish a framework for communicating the need to interpret a 'tolerable' social risk with respect to a given situation (Fischhoff, et al., 1981; Royal Society, 1992). This term has been applied, particularly in the case of the nuclear debate, to highlight that a judgement on what is tolerable is political rather than scientific. Accounting, as it presently stands, has no basis for constructing measures of corporate or social 'value' of such a project. Yet practicality is judged in the context of the business operations that include the financial consequences of different compliance strategies, the domain of accounting expertise.

In government policy making, there is an ever-growing desire for monetary representations of value of hazards in order to make rational decisions. NPR has developed a powerful critique of a number of such efforts. Adams has demonstrated the existence of a systemic bias in the choice of accounting costing methods to those that support political decisions rather than to those that reflect the full range of consequences of the self same decisions.

Evidence has also been accumulated which illustrates that social arrangements for monitoring risks through the collection and analysis of monetary values and other statistics and their subsequent communication reflect the cultural, organisational biases of the collectors and analysts. For example, debates regarding the proper role of cost benefit analysis (CBA) in decision making about risk have centred on technical costing exercise, even though it is conceded by many that in undertaking CBA not everything relevant to decision making can be translated directly into money. Even so such factors are often classed as residuals (assumed not to be significant) and valued via proxies that are already priced in markets. Gray (1990) has argued that, at best, these measures provide a means of communicating a relative value, not the actual value, of a resource. A mundane instance of this type of debates is provided by the ongoing cottage industry in establishing how to value a life for the purpose of public policy making, insurance

sales and compensation claims. A more dramatic instance of the same sort of discourse is illustrated by those efforts aimed at establishing the potential 'kill size' of certain hazards.

Section 4: Concluding Comments

At the present time, the relation between accounting praxis and risk is not well understood. For the most part, accounting risk seems to be identified exclusively with the possibility of financial losses arising from audit. The actions of other actors in the accounting process (as reflected in case studies, surveys and other empirical studies) reveal a collection of different (sometimes contradictory) conceptions and 'taken for granted' understandings of risk that are invoked and applied on an ad hoc, case by case basis. The usefulness of NPR in framing research into accounting and risk remains a moot point because NPR has not yet penetrated research in accounting and finance.

It is instructive at this point to consider the contrasting fortunes of academic accounting and finance research on the subject of risk. The difference in the expertise on the subject of risk claimed by each group is quite dramatic. Finance research proceeds on the basis of a more or less complete consensus on the definition and measurement of risk, one that is grounded firmly in the methodology of Neo-Classical Economics [14] This has given its conceptualisation of risk greater visibility and legitimacy not only in academic discourse on risk but also in public policy discourses on risk in such areas as off balance sheet finance, market regulation, and bank 'value at risk' models. The confidence in academic finance that 'chance has been tamed' has appealed strongly to those who believe in the possibility of rational scientific management. (Dunbar, 2000) Arguably, the absence of an explicit risk problematic in accounting has imposed not only the intellectual costs thus far identified but wider reputational costs as well.

To appreciate the superior marketability of finance expertise in the area, one has only to consult the official dictionary of finance where the central aims of the field are set out. The writer, himself a distinguished researcher in the area of risk analysis explains:

Finance is a sub field of economics distinguished by both its focus and its methodology. The methodology of finance is the use of close substitutes to price financial contracts and instruments... whose characteristics extend across time and whose payoffs depend on the resolution of uncertainty. (Eatwell, et. al., 1989, pp 1, emphasis added)

The above formulation will hold no surprises for an accounting audience but is worthy of our attention, nonetheless. It is significant, for example, that the writer sees no need to distinguish between research methodology (the study of method) and research method (the protocols or actions taken to collect evidence). Instead the methodology of finance is its method [15]. Its method is concerned with pricing contracts whose 'true' value depends on the resolution of uncertainty [16]. Uncertainty is, of course, only resolved once it becomes the present reality (whatever one means by that term). There may exist a class of future events whose uncertainty can be resolved through the price mechanism (by, if nothing else, making it costly to reverse commitments).

The genius of the discipline's self-marketing lies in its success in persuading management that there is a 'way out' of the epistemological dilemmas posed by uncertainty. It goes something like this. The method of finance makes it possible to treat specific uncertainties as if the distribution of possible outcomes is known in the present. Uncertainty can be reduced to risk once we understand risk as the variance around an expected value of a known distribution of a population of outcomes. The problematic of risk management simply consists in devising practical means to establish the probability of expected outcomes (from evidence collected on the past distributions of similar events) and price each by reference to its relevant substitute. It is noteworthy that the 'conceptual' time travel here can be equally described as not moving from the present to the future (as is claimed) but from the present to the Victorian past when such insights were initially developed blissfully skipping over any reference to the important developments of NPR in the self same 'hard sciences' they wish to associate their work.

The apparent failure of accounting research to become identified with contemporary risk management debates [17] appears to be due mainly to premature theoretical closure on the subject of risk. The early adoption of finance based 'objective risk' models by positive accounting research (c.f., Beaver & Brown for a review) seems to have created the false impression that social science and practitioner debates about risk are exclusively concerned with alternative methods for measuring the variance of possible outcomes. But, as we hope we have demonstrated in this paper, debates about risk across a wide range of disciplines (sociology, psychology, culture studies) and practices (insurance, banking, transportation, waste management) establish the presence of alternative discourses on risk to those found in finance. The issue is not whether accounting research is relevant or useful but whether it will take up the intellectual challenges posed by the problematics of risk implied in current praxis.

We have argued that accounting research is not characterised by the same unitary stance toward research methods and methodology as is found in finance. (c.f., Chua, 1986) We have argued that far from being a defect of the discipline, it ought to be considered by managers and others an important source of strength. The long march through the methodological pathways of social science research makes it not only possible, but also relatively straightforward to turn research attention toward risk as a dimension of social and organisational life. Failure to do so condemns accounting to an ill-considered subordination to so-called scientific theories of risk borrowed from the shallower methodological waters of finance. The main hazard of such subordination, in our opinion, is not that 'objective risk' models will colonise accounting praxis but that the language of risk will be opportunistically invoked as a 'cover story' for actual practices and encourage a false sense of security in the risk measurement and risk management capacities of accounting praxis. The audit expectations gap is a pertinent example of what happens when the metaphorical emperor (in this case audit risk) believes himself to be wearing what any child can see he does not.

A second hazard is that the specific emancipatory potential of such projects as environmental accounting and social reporting will not be realised because they require a systematic and philosophically coherent analysis of risk, risk perception and risk communication. This can be seen especially clearly in the field of environmental accounting. Much of the criticism of environmental accounting practise is that it will

simply transfer risks between stakeholders or from the ecology onto humans. Without a methodological consideration of risk, this harm migration criticism may be valid. Social and environmental accounting needs to be premised on making visible the hazards of social actions and their associated risks of harm and as such needs a richer discourse on risk. NPR offers significant intellectual resources for future efforts in the area because it provides signposts on how to reframe the issue of environmental risk and re-conceptualise the risk management praxis.

As we have sought to demonstrate in this paper, the attempt to ‘control’ or manage uncertainty is implicit in a great deal of accounting praxis ancient and modern (as we have indicated) and these informal and implicit practices of ‘risk management’ contrast sharply with the claims made in finance that its methodology has made it possible to tame risk.

Defining risk from this new paradigmatic stance questions many preconceptions about the role of accounting in decision-making. It is not proposed that by reforming accounting praxis relative to NPR logos we can tame chance. NPR suggests that this is never possible, however if accounting is actively (albeit unintentionally) creating additional hazards or simply shifting risks to other groups within society or other species it should be made aware of this. It seems to us obvious that accounting techniques based on ‘objective’ risk or risk as variance, cannot name or describe a range of significant hazards influenced by public and private decision makers. In closing, we propose an accounting version of the caveat to experts inspired by Adams (1995:215).

Remember, everyone else is seeking to manage risk too They are all guessing Their guesses are strongly influenced by their beliefs Their behaviour is strongly influenced by their guesses and tends to reinforce their beliefs It is the behaviour of others and the behaviour of nature that constitutes accounting’s risk environment Accounting interventions that do not alter peoples propensity to take risks will be frustrated by responses that re-establish the level of risk they were originally content with In the absence of reductions in peoples propensity to take risks, accounting interventions will redistribute the burden of risk, not reduce it Potential benefits of reduced accounting hazards tend to get consumed as performance benefits For the foreseeable future, nature will keep her secrets and society will continue to invent new risks Human behaviour will always be unpredictable because it is responsive to human behaviour, even that of accountants It will never be possible to capture objective risk, however powerful your computer, because the computers predictions will be used to guide behaviour intended to influence that which is predicted.

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¹ For purposes of exposition, in this paper, we refer to this new framework as New Paradigm Risk [NPR]. There are some obvious objections to assigning it such a name. First of all, it isn't especially new and secondly there is a something of a cottage industry debating the usefulness of the term 'paradigm'. Thirdly, the researchers themselves do not refer to their work with such a name and the work itself is not distinguished by a unitary, alternative *definition* of risk. However, the label does draw attention to the main feature of this work: The fundamental importance assigned to methodology in establishing the risk problematic.

² In the case of Glasgow, cholera outbreaks in the riverside districts were caused (as later microbiology studies would show) by the reliance for drinking water on the Clyde River, itself polluted by sewage from the tenements in which they lived.

³ The ontological status of past and present events is, of course, highly disputed and brings into play questions of how we 'know' what happened or what is happening (e.g. the observers epistemological framework). Problems may arise when the epistemological framework adopted for past events is assumed to be suitable for the analysis of future events..

⁴ This order of terms may seem illogical. Normally, definition precedes measurement and both come before assessment. However the order of terms above is, as found in the positivist risk tradition.

⁵ The application and value of this approach shall be further examined in the discussion of risk communication later in this section.

⁶ For recent reference on chaos and complexity theory applied in economics see: Arthur(1994); Mouck, (1994); Parker and Stacey (1994).

⁷ The issue of human error and blame within organisations has been the subject of considerable debate, particularly with respect to crisis management. See, for example: Ashby and Diacon, 1994; Guest et al., 1994.

⁸ For an introductory overview of this debate see papers in Royal Society (1983, 1992) and Krimsky and Golding (eds.)(1992).

⁹ The term ‘policy’ is subject to diverse interpretation across different social groups and in different situations. For the purpose of interpretation within this text, a ‘policy’ should be taken to denote anything from formal documentation to an implicit code of practice accepted by a group.

¹⁰ Some of the empirical sites that have attracted methodological attention include accounting and reforms in the public sector (Broadbent and Guthrie, 1992), accounting and the state (Power, 1997) environmental accounting (Bebbington, et. al. (1994) management control (Neimark and Tinker, (1986) Many others could be added and any list, purporting to be comprehensive, would be very long indeed.

¹¹ No single work provides a summary of this contribution. Works that are frequently referenced include that of Chua (1986); Puxty (1993) Cooper and Hopper, Eds. (1990)

¹² The rationale for market testing and other new public management ‘control’ mechanisms is that they will force public sector organisations to face the same Darwinian forces as private sector firms and thereby ensure value for money to tax payers.

¹³ Based on the same principles as policy interpretation, the term ‘procedures’ should be taken to denote anything from a formal documentation to the implicit conduct of behaviour.

¹⁴ There are dissident voices (cf McGoun, 1992; 1993) but this work is at the margins of the paradigm and has as yet not achieved the same presence and influences that, say, critical accounting research has achieved in mainstream empirical accounting research.

¹⁵ At its worst, this ‘methodology’ can degenerate into a crude empiricism in which statistics is made to substitute for theory-generated hypotheses susceptible to formal tests. Hayek, a well known exponent of logical positivism warned: “The statistical method is therefore...irrelevant to the solution of problems in which it is the relations between individual elements with different attributes which matters.” (cited in McGoun (1992) pp.174-75)

¹⁶ However as the history of speculative mania’s and financial panics has demonstrated, the failure of financial engineering to ‘resolve’ uncertainty has occurred often enough and has proved to be costly enough to establish government regulation as a transcendental feature of financial markets. (Minsky, 1986)

¹⁷ The singular exception to this generalisation is research in environmental accounting which has been concerned with themes such as environmental hazard that are related to general area of risk. However, this literature has not, as yet, directly addressed the general issue of risk, risk perception, risk measurement and risk management. It’s focus remains environmental accounting rather than ‘risk’ management grounded in core concepts of accounting (e.g. the entity concept; legal form and economic substance, etc.)