

**CRANFIELD UNIVERSITY**

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**Conceptualisation in Preparation for Risk Discourse:  
A Qualitative Step toward Risk Governance**

**School of Management**

**DBA**

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## **ABSTRACT**

The purpose of this research was, in order to forestall future failures of foresight, to provoke those responsible for risk governance into new ways of thinking through a greater exposure to and understanding of the body of existing academic knowledge.

The research, which focused on the scholarship of application, synthesised the existing knowledge into a “coherent whole” in order to assess its practical utility and to examine what is to be learnt about existing knowledge by trying to use it in practice.

The findings are in two parts. The first focuses on how one “thinks about thinking” about an issue. Early work identified three issues that were seen as being central to the understanding of risk governance. The first is the concept of risk itself, the second is to question whether there is a single paradigm used and the third is what is meant by the term “risk indicator”. A “coherent whole”, structured around seven-dimensions, was created from the range of definitions used within existing literature. No single paradigm was found to be used when discussing risk issues. Three paradigms were identified and labelled “Line”, “Circle” and “Dot”. It was concluded that Risk Indicators were used to performance manage risk mitigation barriers rather than as a mechanism by which organisations may identify emerging risks.

The second focus was the synthesis of academic work relevant to risk governance. It produced a list of statements which encapsulated the concerns of previous writers on this subject. The research then operationalised the issues as questions, which were seen to have practical utility. The elements of the “coherent whole” suggest a way to provide access into the original research. The research suggests that it is unlikely that practitioners would wish to access the original research in its academic format. Further work therefore needs to be done to present the original work in a format that is more digestible to the practitioner community if it is to be used effectively.

The results of this research are considered to be preliminary. No claim is being made that these questions are definitive. The research is however addressing an area which is of concern to those in practice and has not been previously examined.

### **Keywords:**

Failure of Foresight, Coherent Whole, Cross-understanding, Practical Utility.

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# CHAPTER 1 - LINKING DOCUMENT

## INTRODUCTION

The aim of this linking document is to draw together the three projects undertaken in fulfilment of my DBA studies and to describe how each piece of work relates to the others in pursuit of a common purpose.

The purpose of this research is to help forestall future failure of foresight by provoking, in those responsible for risk governance, new ways of thinking about risk through a greater understanding of the body of existing academic knowledge.

As will be demonstrated in Project 2, academics have criticised management and executives within organisations that have been deemed to fail and have accused them of having had a failure of foresight. The academic work goes on to recommend what should have been foreseen and what would have therefore, in the view of these academics, forestalled that unwanted occurrence.

The aim of this research is to synthesise this body of work and to make it accessible to practitioners (the result of Project 3) with the expectation that this may help to forestall future organisational failures. As the work to synthesise the body of existing academic work proceeded, as I tried to apply the existing knowledge, three issues emerged that needed to be clarified before the synthesis could be completed; this became Project 1.

In outline, the three projects were structured as follows:

Project 1 consisted of three theoretical papers, each examining a fundamental building block of any discussion of risk. These were:

- Whether the range of ways risk had been defined within academic literature could be reconciled and seen as a coherent whole.
- Whether there was a single paradigm used when risk was discussed.
- To determine how the term “Key Risk Indicator” was used.

Project 2 was a synthesis of relevant literature in order to establish those areas considered by academics to be key risk governance considerations.

Project 3 operationalised the knowledge synthesised in Project 2 in order to provoke new ways of thinking (or to prevent “seeing as a way of not seeing”) amongst risk governance practitioners.

This chapter is presented in six main sections:

- (1) An abstract of the entire thesis.
- (2) The background and rationale for the research.

- (3) A summary of the research process which includes refinement of research questions and an overview of methodology across the projects.
- (4) A summary of key findings; each separate project report is a subsequent chapter following this chapter (the “linking documents”).
- (5) An analysis of the contribution that this work makes.
- (6) A summary of the limitations of the study and an identification of areas for further research.

Having provided the abstract at the start of the document, I will start with the background and rationale for the research.

## **BACKGROUND AND RATIONALE FOR THE RESEARCH**

In this section, I start by looking at the practical problems under consideration. I will then articulate the context in which this research is set and finally I will elaborate on my starting point which is the concept of risk management.

### **The Problem**

The problem is the issue of corporate failures and what those at board and executive level can do to prevent them. These failures can come in many forms. Widely cited examples include the chemical spill at Bhopal, the destruction of the NASA Columbia and Challenger spacecrafts, the Exxon Valdez and Deepwater Horizon oil spills, business failures such as Barings Bank, Enron, Worldcom, and the 2008 banking crisis to name but a few. Enquiries have been held, reports presented and commentators have pointed, in each case, to failure of management at the highest level.

As a result of these events, codes of conduct have been produced as a way to enhance the effectiveness of management at this level, which is referred to as governance. These codes of conduct make reference to the governance responsibilities for risk management. This provides the starting point for my research. It also raises the question as to whether there is a different approach at this level between what might attract the label “risk governance” as against risk management. The label risk governance was, at the beginning, a speculative proposition based on the differentiation made between management and governance. It was based on the proposition that if management was different from governance, then might there not be a differentiation between risk management and a construction given the label “Risk Governance”? This research set out to explore this concept.

Corporate failures have generated a wide body of academic research. My research planned to use this body of knowledge to explore how others have characterised the failures and the mechanisms leading to those failures and to synthesise them so that they may be of use to those practising governance. The premise behind the research was “if I knew what had been discovered

about the mechanisms of failure identified previously, how might this suggest the risk governance function may be performed?”

We therefore now need to look at the context in which risk governance (the “the governance of risk management”) is performed.

## **Context**

The UK’s Combined Code for Corporate Governance requires that board members and / or members of the executive have due regard for risk management within their organisations. The purpose of the code is to establish good corporate governance practices and thereby, by implication, forestall the potential for organisational failures. Details of the requirement of this code are described in Project 3 Table 5. However, as the Financial Reporting Council (FRC) acknowledges (FRC 2010b), they are not yet clear about what this requirement actually means. Therefore the question becomes one that is concerned with how the existing body of academic knowledge might be operationalised for the benefit of those looking to implement the FRC’s Combined Code. Before this can be done however, we must first examine the term “governance”.

Rhodes (1996:652), who has a political perspective, says that the term “governance” is ‘popular but imprecise’. He describes and defines six separate uses, these being: the minimal state, corporate governance, the new public management, “good governance”, a socio-cybernetic system, and self-organizing networks. It is also recognised that around the world these ideas are seen from very different perspectives. While many writers take a business based perspective, Shipley and Kovacs (2008) and Graham et al. (2003) trace the development of the subject within the United Nations. These overviews provide evidence of a theme running through the literature that the concept of governance can be culture dependent and its application is organisation specific. For the purpose of this research, the focus is on enabling organisational compliance within the UK on the requirements of the current code of practice (FRC, 2010a). The key subsections of that code are C.2 and C.3:

C.2 - The board is responsible for determining the nature and extent of the significant risks it is willing to take in achieving its strategic objectives. The board should maintain sound risk management and internal control systems.

C.3 - The board should establish formal and transparent arrangements for considering how they should apply the corporate reporting and risk management and internal control principles and for maintaining an appropriate relationship with the company’s auditor.

In particular, this research is concerned with how those engaged within the discourse may go about “determining the nature and extent of the significant risks”. The assumption is that if this is not effective then efforts to satisfy the requirements of “C.3” are unlikely to be successful.

While the Combined Code makes reference to Risk Management, I considered this term to be inadequate for the activities necessary at the corporate board/executive level. I will therefore use the term “risk governance” to provide a distinction. Work by Vaughan (1996) and Grint (2008) suggests that, in practical terms as well as conceptual terms, governance (or executive level management) is different from the activity conducted at a lower level. Vaughan (1996:94 & 259) describes how the activities at this level change from managing the detail, to managing by exception. Grint (2008) describes how management at this level also changes from consideration of the routine to consideration of the novel, from examining the specific to considering the principles (a point emphasised by one respondent within Project 3) and from being the expert to being an investigator. It is this distinctly different approach that means that one should question whether the processes and procedures appropriate to risk management at lower levels within an organisation are appropriate at the level being examined by this research (again a point emphasised by a respondent within Project 3).

In order to understand the construct of risk governance (“the governance of risk management”), I now examine the concept of risk management.

### **Defining Risk Management**

BS31100:2008 (the ISO standard) defines “risk management” as the ‘coordinated activities to direct and control an organization with regard to risk’ (2008:2). Other definitions endorsed by the Institute of Risk Management are listed in Table 1 (Hopkin, 2010:37). Dallas (2006:372) was more specific about what needed to be controlled; he defines risk management as ‘The process of controlling the impact of risk’. Immediately, however, the words “direct” and “control” within the ISO might be seen to be at odds with the UK’s Financial Reporting Council’s code for Corporate Governance (FRC, 2010a) where the same words “direct” and “control” are used to define their concept of “governance”. The term “risk management” also can be seen to embrace a far wider range of activity than does the term “governance” (“governance” is examined in more detail later). As a practitioner, Hillson (2007) sees risk management as providing a framework and common language for dealing with and reacting to uncertainty. At the lower levels, these are the everyday risk assessments required as part of an organisation’s risk management process required to handle such issues as compliance with health and safety legislation. This spectrum extends to a role for risk management within the management of projects, both large and small, and the management of high risk processes such as those found within heavy manufacturing or the oil and gas industry.

**Table 1 - Definitions of Risk Management**

Institute of Risk Management	Process which aims to help organisations understand, evaluate and take action on all their risks with a view to increasing the probability of success and reducing the likelihood of failure.
HM Treasury	All the processes involved in identifying, assessing and judging risk, assigning ownership, taking actions to mitigate or anticipate them, and monitoring and reviewing progress.
London School of Economics	Selection of those risks a business should take and those which should be avoided or mitigated, followed by action to avoid or reduce risk.
Business Continuity Institute	Culture, process and structures that are put in place to effectively manage potential opportunities and adverse effects.

Rizzi (2010:312) sees governance as a 'key, but often neglected component of risk management'. My research concentrates on the governance end of the risk management spectrum. Klinke and Renn (2001:159) see three approaches to risk management. These are labelled precautionary based risk management, risk-based risk management and discourse-based risk management. (Renn later produced an anthology of his work in this area which he titled "Risk Governance" (Renn, 2008a).) Klinke and Renn (2001) say:

The third category, i.e. discursive strategies, is essential if either the potential for wide ranging damage is ignored... or – the antithesis – harmless effects are perceived as threats... The hazardous nature of the risks are [sic] mainly based on subjective perceptions that can lead to stress, anxiety and psychosomatic malfunctions.

These risk classes require strategies to build awareness, confidence, or suggest some strength and trustworthiness... and initiate collective efforts... to take responsibility and... accountability... Together with confidence building, the improvement of knowledge to do with risk comprehension is an appropriate means to reduce the uncertainties of life. Clarification of facts, however, is not enough... What is needed is the involvement of affected people so that they are able to integrate the remaining uncertainties and ambiguities into the political deliberation.

Klinke and Renn (2001:169) summarise the strategies for action within discourse risk management as (1) Consciousness building, (2) Confidence building, (3) Introducing substitutes, (4) Improving knowledge and (5) Contingency management. This may be seen to be very different from the procedural based approach utilised within such areas as project and programme or process management, as explored during the course of this research. Here also lies a far greater emphasis on qualitative methodologies. There is an issue as to whether there is a utility for qualitative as well as quantitative methodologies for evaluating risk (see for example Hubbard (2009) who argues in favour of privileging quantitative methods). While it is recognised that there is a place for quantitative methods, a basic premise of

this research is that there is also a place for qualitative methods. This is seen to be especially true when it involves the higher levels of abstraction, ambiguity or complexity, such as found within risk governance. The view taken here is that part of the purpose of any risk governance exercise is to increase consciousness (making the implicit explicit), improve knowledge and to build confidence amongst the stakeholders; in other words, engage in risk discourse.

Therefore in summary, for the purpose of this research, the term “risk governance” is used to denote the activity at board and executive level required by governance “best practice” (as exemplified within the relevant code of governance) to oversee the risk management practice within their organisation. The research looked to identify how risk governance may in practice be significantly different from risk management.

## **SUMMARY OF RESEARCH PROCESS**

Emergence was a key theme within this research. The basic premise behind this work is Boyer’s construct, the scholarship of application (Boyer, 1990:21-23). Within the scholarship of application, the focus of research is to determine what the body of existing knowledge has to teach others and what we learn about that knowledge by trying to use it in practice. For this type of research the issue is to identify work that is relevant and useful (has “practical utility”, Corley and Gioia, 2011) to the issue under examination. This links to a construct derived from Wildavsky. He spoke about “thinking about how to think about safety” (1988:8). For this research, Wildavsky’s idea is modified to become a question of how to think about how to think about risk.

In complex and ambiguous situations, an alternative perspective is seen as an aid to clarity. At the end of the scoping study, I was clearer about what not to research, rather than what was to be researched. The initial research process therefore involved identifying what was important. There were many false leads pursued in an effort to winnow what was not of interest. The process of examining “what was not” rather than “what is” became an important construct within the research. Through this process of elimination the core of the research was identified. In its final shape, the research can be seen to consist of three steps. These steps need to be explained.

Step 1 arose directly out of my aspiration to explore the existing body of relevant knowledge which in turn was driven by my perception of the limited language that was available for risk discourse. The core of the research is reported in Chapters 5 and 6. It was designed to extract from the existing body of academic research, knowledge that may have practical utility for those involved in risk governance. In order to provide structure to the synthesis a triptych of seeing, appreciating and acting was formulated from the literature. This is described in Chapter 5. The aim of the triptych was to provide a broad structure around which I could organise the phenomena described within the literature. Through an iterative processes that tested each idea against the criteria of “foresight” and “utility”, the emergent phenomena were coded, recoded and reorganised, Twenty four categories of phenomena emerged and

these categories provided the basis upon which I looked to operationalise the existing knowledge.

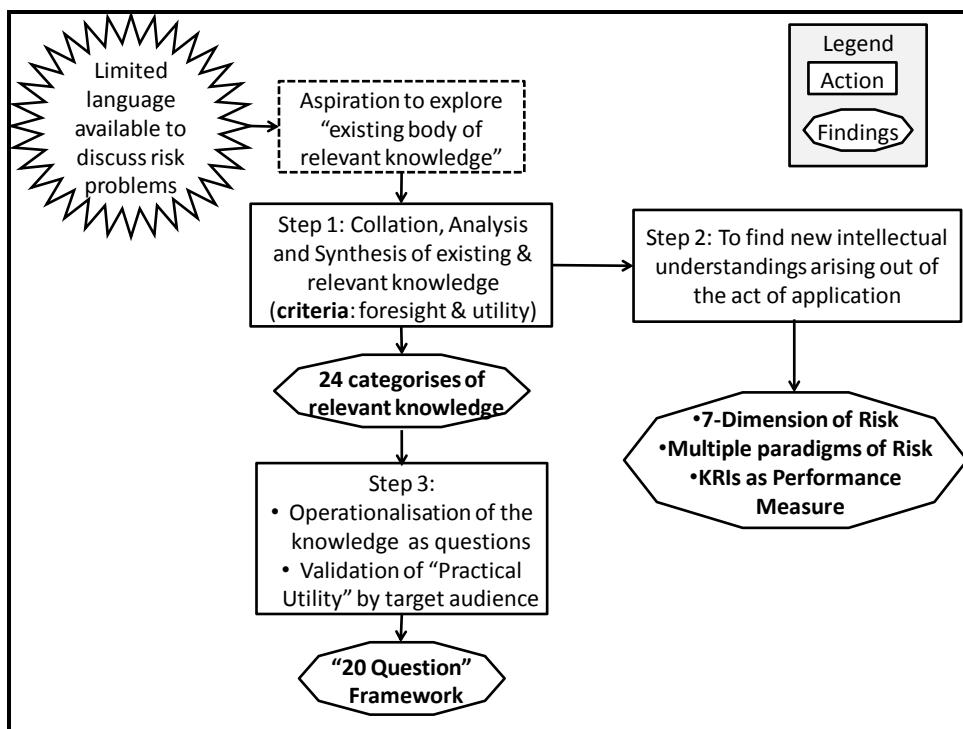
However, as the literature was reviewed, it became clear that three issues needed to be resolved before I could make full sense of the literature. This became Step 2. Step 2 was consistent with the idea within the scholarship of application that new intellectual understanding would arise out of the act of trying to apply particular knowledge in practice. The three issues were (1) how might I make sense of the term “risk”, (2) was only a single paradigm used within the literature and (3) what did the term “Key Risk Indicator” denote? Each of these issues was explored as described in Chapters 2, 3 and 4 respectively and they suggest new ways to think about risk. It is important to note that, while these issues may help an individual to think about risk, they did not necessarily have a direct link to Step 3; they may be seen as a positive by-product of the central analytical process.

Step 3 looked to operationalise each of the 24 categories by turning them into questions that those undertaking risk governance could ask of their risk management experts. The 24 categories were initially structured, as in Step 1, into the groupings of seeing, appreciating, and acting. The categories were reformulated as questions. The validity of this formulation was then tested for its practical utility through a pilot study based on the criteria of feasibility, usability and utility taken from Platt (1993). The pilot study consisted of a serial process through four reviewers and a final step where all the reviewers approved the question set that was subsequently sent to the main respondents. During this review process the 24 categories became 20 questions and these questions were reorganised into four groupings which were labelled “problem”, “group”, “process” and “general”. This question set was then sent to the 17 main respondents, all of whom worked at board/executive level within their organisation and therefore fell within the target audience. As in the pilot study, the main respondents were asked to comment, for each question, on their practical utility based on the criteria provided by Platt. The responses for each question were collated under Platt's criteria. The comments reported in Chapter 6 are designed to represent the range expressed. No attempt is made to reconcile conflicting views. However, there was considered to be enough consistency in the responses to suggest that the questions, when modified, would provide the target audience with practical utility. The final question set articulated in Chapter 6 incorporates comments from the main respondents. In addition to the direct comments on the Platt criteria, the respondents raised a number of other issues that they considered to have important implications for the practical utility of the proposed questions. These issues are also discussed.

The key variables within the process were “existing knowledge” and “individuals working at board/executive level” where the purpose of the knowledge was to stimulate the individuals to think more about the issue of their risks. The process moved from a researcher’s proposition, that being an initial set of questions (developed through an iterative process) to a set of questions validated by representatives of the user community. The staged process is summarised in Figure 1.

This process should be seen to be consistent with my philosophical position (this is laid out in more detail later in the paper) that individuals understand the “real world” in their own way and this is affected by their world view, training and experience; this has been called “seat of understanding”. In this document I have looked to articulate how I have interpreted the work that I have read and analysed. Accepting that my view may differ from that of others, I have looked to use the process of cross-understanding in order to contrast my views with those of others with the purpose of enriching both our understanding of the issues addressed. This process took place during Project 3 and the resulting enhanced understanding is reported in Chapter 6.

Therefore, in this section I will discuss (1) the overall approach that I will take to this research, (2) the relationship of risk to performance issues, and (3) how the construct of “risk” might be articulated by risk governance practitioners. I will start by looking at the factors that are central to my research overall.



**Figure 1 - Steps of My Research Process**

**Core Aspect for the Research**

The approach that I took to this research was seen to be governed by two groups of factors. The first group pertains to more general academic considerations. These were (1) my level of analysis, (2) my unit of analysis, (3) my ontological position and (4) my use of the “first person” to report my results. The second group are factors that specifically drove my research. These are firstly a desire to maximise the “Practical Utility” (Corley and Gioia, 2011) of the body of existing relevant knowledge, secondly the desire to develop good questions rather than answers, the third is the desire to communicate the



research area as a “coherent whole” (Editor AMR, 2011). The fourth is the idea of “cross-understanding” (Huber and Lewis, 2010), important to any form of discourse. The fifth and final factor that drove my research was the criteria to be used to assess the validity of the research. I will start by looking at my level of analysis.

### **Level of Analysis: Corporate Board Level**

The level of analysis is the individuals who are concerned with the governance of risk and operate as a group at board or executive level. The level of analysis has been defined using a premise provided by Vaughan (1996) and Grint (2008). At this level, management activity might be characterised as being more abstract than that necessary for day to day management. This level of activity may therefore be characterised as the “direct and control” which is the ‘classic definition’ of Governance within the UK (FRC, 2010a). It is recognised however that there are many competing explanations for and definitions of the term “governance”, hence my use of the term “risk governance” within this research. This is one of the key assumptions within this research.

### **Unit of Analysis: The Risk Management Process**

The unit of analysis is the risk management process; specifically, I will be looking at the phase of the process where those involved conceptualise (create their mental model) the issues they face. Within all risk management processes there is a phase where the potential risks are identified and assessed for inclusion in a number of action categories. These are: take, mitigate, deflect and remove. The part of the process that is of specific interest to this study is where the risks are conceived and categorised. More specifically, as part of an ongoing process, how new risks are conceived and how once pertinent risks are removed from further consideration. More specifically still, the work examines ways of conceptualising and cross communicating (Huber and Lewis, 2010) facts, ideas and constructs within the stakeholder group and within the prescribed level of analysis.

### **Ontological Position**

The position taken by me in this research is that there is a world outside the personal perceptions (hence the dangers posed by “risk”), yet aspects of risk appear different to different people (hence the advantages and disadvantages of variety). In addition, the limited capacity of individuals makes it impossible for humans to perceive the world accurately because of the imperfections of the human senses and hence the emphasis on cross-understanding.

The term “risk” may be seen to be amongst one of the most widely used words, with the greatest number of meanings, in the English Language. In understanding the term, the first issue to be tackled is whether risk is a tangible “thing” or an intangible “mental construct”.

At the more tangible end of the spectrum are the engineering sciences where at a more general level of usage, the term “risk” is defined using a succinct

phrase or a simple tripartite format (e.g. Risk = Probability x Impact; using quantitative methods to resolve technical problems. See Table 5 of Project 1 – Paper 1 for other examples).

The constructionist end of the spectrum can be seen in Renn's contribution to the debate. Renn (2008a:110) states that 'Perceptions have a reality of their own'. He goes on to characterise these perceptions of risk as a fatal threat/ stroke of fate/ personal thrill (test of strength)/ a gamble (game of chance) and an indicator of insidious danger (early warning indicator) (Renn, 2008a:110-117). Post-Modernist writers (such as Lupton, 1999 and Mythen, 2004) see risk as a device to maintain cultural boundaries (referred to as the "Cultural-Symbolic" debate), as a way to maintain order through self-discipline (referred to as the "Governmentality" debate) or whether the benefits of technology are worth the risks involved (referred to as the "Risk Society" debate). According to Mythen, (2006:13), Giddens sees risk as a political concept, as it is used to attribute *blame*. These are all seemingly legitimate uses of the terms which have their own detailed warrants.

Renn (1998:49) states 'both extremes, the constructivist and the realist perspective, miss the point, as risks are always mental representations of threats that are capable of claiming real losses'. I argue that this requires an "ontological oscillation" (Burrell and Morgan, 1979:266) between being a constructionist (in order to understand risk) and a positivist (in order to manage it effectively and efficiently). This approach was justified elsewhere by Snook (2000:76) in his award winning PhD dissertation at Harvard.

Therefore, in summary, the ontology to be used here accepts that while risk may be a mental construct, it does have real, tangible consequences and it is from the perspective of managing these issues that the term has been examined.

## **First Person Enquiry**

This research will be reported using the first person construct. I have described the ontological oscillation associated with the study of risk and how studies oscillate between tangible phenomena that may cause an unwanted outcome to examining the mental constructs central to the perception of risk. As this research is concerned with how to think about how to think about risk, the focus is on the mental construction involved. Mental constructions are an individual issue. In this paper I intend to describe my understanding of risk in order to communicate my ideas to those involved in risk governance. I therefore do not consider it would be valid to give the subject an "illusion of certainty" (Gigerenzer, 2003:9-22) that is inherent in any third person narrative. My detailed reasoning is set out in Appendix A.

## **Practical Utility**

Corley and Gioia, (2011) discussed what constitutes a theoretical contribution and the utility of academic work. They distilled existing literature on theoretical contribution and divided it into two dimensions. These are originality and utility.

Of the two my interest is in utility. Corley and Gioia (2011:18) further divide utility into two dimensions: scientific or practical.

Scientific utility is perceived as an advance that improves conceptual rigor or the specificity of an idea and/or enhances its potential to be operationalized and tested... Theory can advance science by providing cohesion, efficiency, and structure to our research questions and design... In a very practical sense, good theory helps identify what factors should be studied and how and why they are related.

Practical utility is seen as arising when theory can be directly applied to the problems practicing managers and other organizational practitioners face... through “the observation of real-life phenomena, not from ‘scholars struggling to find holes in the literature’”... such a practical problem focus is a good way to develop theory *per se*. Thus, theory directed at practical importance would focus on prescriptions for structuring and organizing around a phenomenon and less on how science can further delineate or understand the phenomenon.

The focus of this research is, as a scholarship of application, to examine the practical utility of the previous academic work relating to the subject under consideration, i.e. Risk Governance.

## Questions Not Answers

The purpose of this research is to provide “good questions” that provoke animated risk discourse. While academics may wish to see the purpose of their work as being to describe, explain, predict and test (Yin, 2003), this may not have the greatest practical utility. After the fall of Singapore, Sir Winston Churchill is reported as having said: “I ought to have known... I ought to have asked” (Weick and Sutcliffe, 2007:84). Huff (2000) records the speech to the Academy of Management by their ‘Executive of the year, 1999’ John S. Reed, who stated:

We (as managers) have to do two things: we decide what to do, and we try to make it happen. If you boil down all of the practice of business, it is the combination of those two things and the interaction between them that defines the world in which we live.

He goes on to explain that

All... research can do is inform us. It certainly does not give us answers.

Weick (2004) sees utility in academic work that “provokes” discussion (it ‘gets us talking, digging, comparing, refining, and focusing on the right question’). Peng and Dess (2010:287) state, scholarship ‘can help managers frame issues, ask the right questions, and question their underlying assumptions’. In terms of the two key practitioner questions posed above by John Reed (‘what to do’ and ‘how to make it happen’), there is seen to be a need for researchers to broaden their scope in order to produce the pertinent questions which stimulate informed debate rather than deliver packaged answers.

## **Coherent Whole**

The Editor of AMR (2011) 'urge(s) management scholars to take up this challenge' of 'exploring real-life problems... by taking down walls and building bridges between perspectives'. He goes on to suggest that 'Combining multiple theoretical lenses to develop new explanations of management phenomena and solve managerial challenges will continue to be a critical aspect of how research is conducted in our field' (2011:11). He says:

This requires a deep discussion of how underlying assumptions can be combined... the clear articulation of the fit between theories becomes important because readers and reviewers cannot be expected to draw the links that authors may observe, as might be the case in situations where either the phenomena or the underlying assumptions provide such an anchor or starting point... new theory hinges on the ability of authors to explain how seemingly disparate or unrelated theories fit together to form a coherent whole.

The purpose of this research is therefore focused on creating a coherent whole, through synthesis, out of the understanding, models and theories which are to be found in the literature relating to organisations' disasters and failures.

## **Cross-Understanding**

According to Huber and Lewis (2010:7)

Cross-understanding refers to the extent to which group members have an accurate understanding of one another's mental models. Such understanding can evolve through intermember communications... members' factual knowledge, cause-effect beliefs, sensitivity to the relevance of particular issues, or preferences. Cross-understanding is a group-level, compositional construct.

Therefore the first step in successful cross communication must be for an individual to be clear about what they think. For those concerned with risk governance, they do not have the luxury of being able to reduce a problem to what is manageable, they have to deal with problems as they are. This point is illustrated by the risk terminology discussed in Paper 1 of Project 1; the question of what is risk? Within academic literature there are many competing definitions of risk, which are all derived for their own purpose. For those engaged in risk governance, it is not a matter of selection but of making sense of the whole. Therefore in order to be able to cross communicate, they must first make a coherent whole.

## **Criteria for Validity**

The validity of this research takes two forms. The first is practical and the second is academic.

To be coherent within the purpose of this research, the criteria for validity for this work need to be focused on the work's practical utility. However, true practical utility can only be determined by individuals within a given set of

circumstances. The purpose of the devices created during this research was to “provoke” discussion (‘gets us talking, digging, comparing, refining, and focusing on the right question’ – Weick, 2004) as part of cross communication. In order to be able to generalise, the views of individual respondents were sought; these views were structured around the criteria of usability, utility and feasibility developed by Platts (1993).

In order to achieve academic validity this research has focused on rigour in the methods used and relevance to its purpose. Each piece of work has been, in line with its purpose of application, a work of synthesis. While there has been much previous work on collation as part of synthesis (“systematic review” for example), the examples available are set under quite different circumstances. In general such collation processes have been used within very tight circumstances; to examine a tightly bounded subject rather than synthesis in an attempt to develop a coherent whole. As the first attempt at synthesising this whole area, gaps are inevitable. Therefore the validity of the synthesis needs to be judged by its outcome. While rigour was applied to each part of the work, in the end I would only claim that the work was conducted assiduously (defined as “showing great care and perseverance”). In judging the outcome of this research, the issue becomes whether the final frameworks are robust, i.e. do they stand up to use? This test is consistent with Boyer’s (1990) design for the scholarship of application. Therefore the validity of the thinking constructs is whether they are robust enough to embrace material not considered during their development.

## **Risk Performance Relationship**

Often risk management is seen as being a separate management discipline, an adjunct to the main management process (see Reason 1990:200); in this work, however, I take a different view. I argue that (1) risk management needs to be an integral part of management and therefore should be encompassed within the performance management sphere and (2) that performance management requires the implicit to be made explicit if they are both to be managed effectively. I will start by discussing the place of risk within management.

The relationship between risk and other aspects of management is not settled. The work of Prof James Reason (1990:200) provides an example of the thinking that risk is a separate functional area. Academic and practitioner literature also provides an ambiguous mix involving performance management, risk management, opportunity management and uncertainty management (Ward and Chapman, 2002:1); they are all used to cover the dialectics of risk-reward which is also articulated as either cost-benefit (Gigerenzer, 2003:76; Sheffi, 2005), upside-downside or opportunity-threat (Browning in Hillson, 2007:319). However, as Ramgopal (2003:22) acknowledges, ‘Strategies for managing project uncertainty cannot be divorced... from strategies for managing the project objectives and associated trade-offs’. The literature also gives examples, such as Bobker in Hillson (2007:68), who insists that risk should only refer to adverse events. The language is enriched (or maybe just complicated) further by such writers as

Ward (Hillson, 2007:212) who uses the term “uncertainty management” to embrace “risk management” and “opportunity management”. To others, all management is risk management. Shaw (2005:23) cites this as the view of the Canadian risk management pioneer Douglas Barlow. Charles Handy has said something very similar: ‘Risk management is not a separate activity from management, it is management... predicting and planning allow prevention ... Reaction is a symptom of poor management’ (Merna and Al-Thani, 2008:44). Hollnagel (2009:18) is even more succinct: ‘Instead of seeing success and failure as two separate categories of outcomes... they are but two sides of the same coin.’ This sees the “risk-reward” dialectic as being the most fundamental of all management dilemmas; that every benefit has associated jeopardy, some of which are obvious and others more difficult to identify. This research places the management of risk alongside performance management, making them “two sides of the same coin”, where performance management takes an optimistic benefits focused approach and risk management takes a complimentary but pessimistic jeopardy focused approach.

It is a base assumption of this paper that all human activity requires a balancing of risk and reward. Adams (1995:181) asks the question as to whether the objective of Risk Management is to balance risk and reward or just to reduce risk; Adams is concerned that in Ulrich Beck’s Risk Society ‘one is no longer concerned with attaining something good, but rather preventing something worse’. ‘Beck believes that undivided emphasis on the distribution of social goods is politically misguided, pronouncing that political energies should be redirected towards the elimination of social bads’ (Mythen, 2004:25). Yet it is *a priori* that for progress or advancement to occur, risks need to be taken.

Given the risk-reward dialectic as a basic assumption, we need to consider how this risk performance might be monitored. Within the performance management field, Calandro and Lane (2006:38) recommended that ‘firms utilise two scorecards, one for performance and a separate one for risk’. Their arguments are based on (1) the complexity of combining the two, (2) that the people in departments that measure risk and performance are normally separated, (3) that the separate scorecards can balance managers’ time between performance and risk and (4) risk and performance can resemble one another therefore separate scorecards can delineate between the two subjects. They do, however, go on to say that ‘if separate scorecards are adopted, it is strongly recommended that each scorecard be constructed within a common framework.’ The question this leaves is whether, as benefit and jeopardy are intimately linked in practice, the management practice of separating them is dysfunctional? Their argument as to the complexity, however, is well made and, as Perrow (1999) warns, complexity, as an attribute, can lead to other risks. However, this is a classic risk-risk situation where the risk of complexity of combining the two factors must be weighed against the risk of failure in coordination if the two are separated. Therefore, for clarity, while I accept that risk and reward are indivisibly linked, in this thesis I associate the term “performance management” with the benefits derived from the system and associate the term “risk management” with any jeopardy inherent in the activity. The issue then becomes how they may be

monitored. As in performance management, which has Key Performance Indicators, risk management has Key Risk Indicators. This raised another fundamental question about the purpose and role of these Key Risk Indicators and whether they are geared toward the identification of emerging sources of jeopardy. The question was therefore formulated as:

**Question 1:** What is the purpose and role of Key Risk Indicators?

Question 1 was addressed as part of Project 1.

## **Defining Risk**

As I reviewed the literature, using a structured approach based on the template suggested by Wallace and Wray (2006), it became clear that the term “risk” was used in many different ways. Therefore, before starting work on risk governance, I needed to make sense of the term. This deceptively simple task developed into a major piece of work. The research questions therefore became:

**Question 2:** How might those involved in risk governance understand and use the term “risk”?

**Question 3:** How might the apparently conflicting terms be seen as a “Coherent whole”?

From the literature review required to answer these two questions, a further question emerged. While these issues were not debated, it became clear that writers on the subject of risk did not hold the same world view. They seemed to have different fundamental assumptions upon which they based their work; these assumptions had not been debated. Question 4 was therefore formulated as:

**Question 4:** Was there a single consistent paradigm used in the examination of risk?

Therefore, before I was able to finish my synthesis of the literature, I would need to resolve these questions. They became my Project 1. First I tackled questions 2 and 3, then I tackled question 4 and finally I examined question 1. Each piece of work was conducted as a concept paper. The results are reported in Chapters 2 to 4 respectively.

Having completed Project 1, I was able to complete my synthesis of the relevant literature (see Chapter 5) and then conduct a piece of empirical research, based on semi-structured interviews, to assess the practical utility of the questions that were developed from the literature (see Chapter 6).

## **SUMMARY OF KEY FINDINGS**

In this section I summarise the key findings from my research. The structure of the findings will be based on each of my three projects. The first to be discussed will be the three stand-alone studies that formed Project 1. Second I will summarise the findings of Project 2 where I used the concept of “failure of foresight” as a device to scope and synthesise the rich body of literature that is

relevant to governance failures. Finally, I will summarise the findings of Project 3 which evaluated the practical utility of the 20 questions operationalised from the findings of Project 2 and which, as a “coherent whole”, provide a framework designed to provoke risk discourse at the governance level. I will start with the results of Project 1.

## **Project 1: Three Papers**

Project 1 consists of three papers. The papers addressed the questions (1) “What is risk?” (Chapter 2), (2) “Is there only a single risk paradigm?” (Chapter 3) and (3) “What is a risk indicator?” (Chapter 4). Their findings will be summarised in this order.

### **Paper 1 – Seven Dimensions of Risk**

The first issue addressed how an organisation may conceptualise risk given the many different definitions of risk found in the literature (See Chapter 2 Tables 1 & 2). By the very nature and function of a corporate board, individuals on those boards may well face and, according to the law of requisite variety, it is desirable that they do face, a wide variety of different perspectives. This is likely to include a variety of these constructs of risk. They will therefore need a way to see the definitions as a coherent whole in order to develop a cross-understanding of risk within their group.

The work shows that risk is seen to be a ubiquitous term that has many meanings for many different communities within society and that the term itself is ambiguous. For example Mythen (2006:1) says ‘Despite its global omnipresence, Risk remains an opaque and disputed concept’ It has been given a multitude of meanings by its users. Leitch (2008:30-31) states that ‘there is a big difference between ‘some Risks’ and ‘some Risk’. Cleden (2009:121) defines risk as ‘an expression’; (Holton (2004:22) defines it as ‘exposure’; Chapman and Ward (1997:7) define it as ‘the implications’, and Dean in Lupton (1999:138), as a ‘form of rationality’.

This ambiguity can cause problems and confusion for those trying to manage risk and attempting to forestall the next major failure. I looked to move on from the simpler differentiation described in Chapter 2, such as between risk and uncertainty, and accept that the term “risk” has multiple uses in multiple contexts. The issue therefore becomes: can and if so how, might these variety of uses be reconciled precisely enough to enable agreement of any further action to be taken.

I came to think about risk as an “unwanted occurrence about which you care” and produced a framework (a coherent whole) that saw risk as having seven dimensions (see Chapter 2, Figure 5). Chapter 2 also shows that the term “risk” is linguistically flexible and is too ambiguous to be used on its own if clarity is required. An alternative may be to divide the term into specific subcategories such as those tentatively proposed in Table 3 of Chapter 2. The term “risk” therefore appears to need amplification or a context if its meaning is to be communicated accurately. In order to resolve these ambiguities and



apparent contradictions, the simple systems framework provides seven dimensions as a means of relating the various usages of the term.

## **Paper 2 – Line, Circle and Dots**

In Chapter 3, I question whether there is a single, universal paradigm in use for the discussion of risk related subjects. I claim that this is not the case. The work suggests that I have potentially identified three (see Chapter 3, Table 1) and warrant this claim with examples; these I call “Line”, “Circle” and “Dot”. I do not, however, claim that there are only three or that this work proves the three on offer. What it does claim is that there is sufficient evidence to question the assumption that there is a single paradigm used. The significance of this finding is that it provides a warning to both practitioners and academics to question what paradigm(s) may be underlying a particular piece of research or practice and therefore be cautious when extrapolating or generalising one piece of work to another. This is not the practice in academia or with practitioners at present.

As an example of the complexity of potential risk paradigms, in Chapter 3 I link Line, Circle and Dot to the work of Renn (2008a) in which he discussed three approaches to risk management (Precaution-based, Risk-based and Discursive-based). Table 2 of Chapter 3 combines these six elements in order to demonstrate the potential for there to be multiple perspectives at work within any discussion of risk and therefore the potential for there being multiple paradigms. This conclusion points to a potential factor that may lead to failures in cross-understanding between those discussing risk issues.

This research would suggest that those engaged in the discussion of risk need to ensure that they determine the underlying paradigm in use by those taking part and by those otherwise contributing to the discussion (such as authors of articles or books, or consultants), if they are to fully appreciate the significance of the words being used.

## **Paper 3 – What Are “Key Risk Indicators”?**

Finally, Chapter 4 provides details of the third paper that made up Project 1. In this research I examined the use of the term “risk indicator” and contrasted the current use of the term with the nature of the phenomena “risk”. I claim (warranted by examples of its use in academic literature) that the term, as currently used, has more in common with performance indicators than to indicate the emergence of unwanted issues. It is the emergent nature of risk that has been described by the likes of Slovic (2000). Risk Indicators are currently used to measure negative impacts or the performance of risk mitigation barriers rather than risk *per se*. The significance of this finding for practitioners is the potential for an organisation to be misled into believing that they are managing risk when, in fact, they are managing their attempts at risk mitigation thereby leaving the actual risks unmonitored and thus creating a gap through which risk may emerge unnoticed. For academics, the paper provides another warning over the necessity to define more clearly their use of this term and its place within their work.

In relation to the core of my research, this finding is significant for two reasons. The first is that it provides further justification for linking risk management to performance management and both indicators monitor performance in one form or another. The second issue of significance is that it would suggest there is a gap within the risk management discipline in ways (or lack of ways) of monitoring organisations for emerging risk.

### **Summary of Project 1**

In summary, in Project 1 I took Wildavsky's (1988) idea about questioning how one thinks about thinking about issues and applied this to three subjects that I see as being central to the governance of risk. The first is the idea of the concept of risk itself, the second is to question whether there is a single paradigm used when risk is discussed and thirdly, I examined what was meant by the term "Key Risk Indicator". For the first subject I found that a coherent whole could be created from the wider range of definitions used within existing literature. The coherent whole was structured around seven dimensions based on the construct of risk as an "unwanted occurrence about which you care". The second paper examined whether risk discourse is currently conducted within a single paradigm. I came to the conclusion that it is not. I identified three potential paradigms which I have labelled "Line", "Circle" and "Dot" the significance of which is that if those involved in risk discourse do not recognise that they have different perspectives, this is likely to result in a failure in cross-understanding. In the final paper, I examined the construct of a Key Risk Indicator and came to the conclusion that these are used for the performance management of risk mitigation barriers. This links risk management and performance management more closely and left the question as to what mechanisms may be available to organisations to monitor their emerging risks.

The completion of Project 1 left me with a clear understanding of three issues which I considered to be essential in order to make sense of the body of existing knowledge. As a result of this work, I was therefore able to complete my synthesis of literature.

### **Project 2: "Failure of Foresight"**

In this Section I shall summarise the key findings from Project 2 which are reported fully in Chapter 5. To this end I will firstly outline its purpose and design before summarising the findings.

The purpose of Project 2 was to identify within the relevant body of academic literature the factors or phenomena which, having been associated with failure of foresight, may be used during the process of risk governance to help those involved to think about the risk issues they face. As well as looking at general risk management, the research has examined literature covering: (1) accident investigation, (2) crisis management, (3) business continuity management, (4) operational risk management, (5) process risk management, (6) project and programme risk management, (7) resilience engineering and (8) high reliability. In order to give structure to the synthesis, the phenomena identified were grouped under three headings. These headings were "failure to see",

“failure to appreciate” and “failure to act”. The genesis of the first heading, “Failure to See” came from the idea of “seeing as a way of not seeing” (Van de Ven and Poole, 1995). The heading was used to capture any phenomena relating to the receiving of warning signals. The genesis of the second heading, “Failure to Appreciate” was Vaughan’s (1996) reference to the idea of “Seat of Understanding”. The heading was used to capture any phenomena relating to comprehending the value of warning signals. Finally the heading “Failure to Act” came from the repeated queries by authors as to why individuals, despite warnings, had failed to prevent a disaster.

The findings of the paper were that a number of the phenomena identified in previous research can only be applied in hindsight as they have extremely ambiguous start rules. The use of these phenomena should therefore be restricted to post incident analysis as they have limited application as part of foresight. And those phenomena that could be used with foresight were also identified. The process of synthesis enabled a richer understanding to be developed on the factors that contribute to organisational failures. These factors were articulated in the form of statements set out in Table 2.

**Table 2 - Factors Identified during Project 2**

1.	To be clear about their rules for inclusion and exclusion of subject areas and the risk(s) associated with their delineation.
2.	Of those issues that are labelled so improbable as to be “inconceivable”, which still have such potentially serious consequences (the unacceptable) that we must stay mindful of them.
3.	To make themselves aware of the personal and organisational filters that might inhibit their seeing warnings available to them.
4.	To assess whether their plans and policies, which are a product of their bureaucratic process, are likely to withstand “an abrupt and brutal audit”.
5.	To establish what risks are “acceptable” to them and why, and then test their reasoning to ensure that it is robust and not a “fantasy”.
6.	To be aware of the incoming data and need to be able to assess it against signal types in order to understand its relevance (either positive or negative) and be able to justify its inclusion or exclusion from the debate.
7.	To question whether they are seeing all the lessons that are available to them and whether they understand, and therefore take into account, factors that might be working against them in this regard.
8.	To question whether the right information is getting to the right people within the right timeframe and how they would know if it was not before it was too late.

9.	To question whether there is clear evidence that they do not fall into the category of an “error-inducing” organisation.
10.	The question for the executive is therefore to judge whether they have enough relevant detail to enable them to appreciate the complexity of the mechanisms acting at the time.
11.	To judge the most appropriate level within their organisation for decisions to fall, given the need for the appropriate seat of understanding, resource power and the need to act in a timely manner.
12.	To question whether the messenger (source of any data) is having an effect on how the data is viewed and, if so, whether this can be judged to be “rational” and therefore “valid”.
13.	To discuss what method of analysis would be most appropriate to the problem at hand and whether a formal system of analysis may help to reduce the effect of personal bias.
14.	To discuss which factors might be acting on and affecting the perceptions that contribute to how they appreciate the signals available to them.
15.	How to recognise “drift” as it occurs.
16.	To question how well they understand their system, who will have to handle potential crises and whether they are mentally equipped to do so.
17.	Define the group’s understanding of the terms “anticipation” and “resilience”.  Define whether the action needed is to create a “plan B” or to generate buffer capacity.
18.	Is the action required about process or outcome and is the jeopardy associated with each of them clear?
19.	To be aware of the strengths and limitations of rule-based and knowledge-based approaches and be clear when each should be applied within their organisation.
20.	To debate the appropriate use of the five mechanisms of action and coordination (standards, plans, mutual adjustment, rules and experience) and how to enhance each and safeguard the organisation against the weakness of each.
21.	To be aware of the factors affecting the potential for inaction by themselves as individuals and of the group overall and what mechanisms they may put in place to guard against this issue.
22.	To debate whether their group is taking any steps to guard against the threats created by group dynamics.

23.	To debate whether the criteria being used for making decisions may not be viewed by others, at some later stage, to be amoral.
24.	<p>What might occur (including the inconceivable):</p> <p>(1) what might cause it, (2) how might we prevent it, (3) is the necessary process in place, (4) are our people effectively trained, (5) do they have the necessary resources, (6) will they recognise the problem should it arise, (7) will they see the right action to take, (8) will they implement the necessary action appropriately, and (9) will we get the same answers if we ask these questions tomorrow?</p>

In summary, as a result of a synthesis of relevant academic work, Project 2 produced two findings of significance. The first is a list of statements (Table 2) which were seen to encapsulate the concerns of those who have written previously on this subject. These statements provided the starting point for Project 3. The second is the construct of “failure to see, failure to appreciate and failure to act”. This structure, used within the paper, is seen to provide a useful tool for self-examination in relation to risk related data.

### **Project 3: Empirical Evaluation**

The purpose of Project 3 (see Chapter 6) was to operationalise statements developed by Project 2, to articulate them as a coherent whole and to assess whether they had practical utility. The context for the work was the UK’s Combined Code on Corporate Governance (FRC, 2010a); this provided the standard to which those involved with risk governance within the UK work. In order to achieve its purpose, project three was constructed in three stages. The first stage was to operationalise the questions. Stage two was to pilot the questions and stage three tested the questions amongst the target community. The findings of Project 3 can be seen in two parts. The first part focuses on the final question set and the second concerns the key issues that arose as a result of the interviews conducted. I shall first look at the final question set.

The research produced 20 questions under four main headings. These headings emerged during the operationalisation processes as being the most coherent. The headings were “The Problems” (these concerned the potential unwanted events), “The Group” (these concerned the interaction between those involved in the risk governance process), “The Process” (these concerned the processes used for risk governance) and finally, two “Summarising Questions”. As result of the interviews, a series of criteria emerged that shaped the final question set (see Table 3). Although respondents made some quite specific comments about the original questions, many of these had to do with the application of the questions to their specific circumstances. As these did not help the generalisability of the questions they were not used in every formulation of the question set. Having said that, the criteria which emerged that did affect the question reformulation were:

- While questions have been derived from a rich source of ideas, for clarity each question should contain a single clear idea. Where

compound questions are required, each part of the question should be clearly separated.

- The question should ask, or at least imply, that the evidence on which the judgement is made should be made explicit rather than those individuals involved relying on intuitive judgement. This is to ensure all underlying assumptions are aired and debated which, in turn, would enhance shared understanding within the group.
- The use of the negative question was deliberately used in order to challenge the “positive perspective” often held by senior management (this has been referred to as “optimism bias”).
- The way the terms “executive” and “the board” were used caused some confusion. The intent of this research was to focus on those with governance responsibilities whether this was as a “unitary board” or in organisations that have distinctive separate roles such as those of the executive or as a board member. Therefore the term “board/ executive” was adopted to capture both cases.

**Table 3 - Final Question Set**

<b>The Problems</b>	
1.	Where do we need to have clear and fully justifiable criteria for which events or scenarios are <b>included in</b> and <b>excluded from</b> our risk management process?
2.	While we normally monitor “ <b>outcomes</b> ” (“end”), where do we need to monitor the “ <b>processes</b> ” (“means”) that might create unacceptable outcomes?
3.	What risks are “ <b>acceptable</b> ” to us and why; how have we tested our reasoning for both core and non-core activity (against both internal and external yardsticks) to ensure that our reasoning is robust?
4.	Of those issues that we judge to be so improbable as to be “inconceivable”, which of these still have such <b>potentially serious consequences</b> (unacceptable) that we must stay alert to them?
5.	What evidence do we have that we have a shared understanding about: (1) when we will prepare an alternative plan (anticipation), (2) when we will set aside reserve capacity (resilience), (3) where we just react to situations (reactive)?
6.	How might our approach to <b>risk taking be stifling</b> our organisation?
<b>The Group</b>	
7.	Are we aware of what factors might: (1) inhibit us from <b>taking note of warning signs,</b>

	(2) <b>affect our perception</b> of them, (3) <b>restrain us from acting</b> upon them?
8.	a. <b>How well do we understand</b> our system's operating modes (routine, high tempo, emergency and maintenance) and manage the transition between them? b. How well do we know those who will have to handle potential crises and are we sure they are equipped to do so?
9.	How do we judge the most <b>appropriate level</b> within our organisation for decisions to be made and whether each <b>decision maker</b> has the appropriate intuitive understanding of the issues, the organisation and its resources, and the ability to act in a timely manner?
10.	What proof is there that we are conscious of the <b>dynamics</b> and personal interactions that might cause our board and executive <b>team</b> to be <b>dysfunctional</b> (thereby generating risk) and what are we doing to ensure that we do not fall into these traps?
<b>The Process</b>	
11.	How can we be sure that we have a culture that takes every key <b>opportunity to learn</b> from unwanted events experienced within the organisation (accidents and near-misses) and from the experience of other organisations?
12.	How do we, as the board/ executive group and as an organisation, ensure that we are getting <b>the appropriate and relevant data</b> to feed into our risk discourse? How do we judge appropriate and relevant?
13.	How do we judge whether the way we <b>analyse risk</b> is appropriate to the risks we face?
14.	What might give us confidence that after an unwanted event our <b>decision-making will stand up</b> , in hindsight, to critical <b>external scrutiny</b> ?
15.	How do we ensure that all the members of the board/ executive have a <b>shared view and understanding</b> of the organisation, the way it works and its risks?
16.	What evidence can be provided that our <b>plans and policies</b> are <b>robust enough</b> to withstand a disruptive event?
17.	How might we notice where an <b>emerging gap</b> between our practice and our formal procedures becomes a potential source of risk?
18.	When would we expect our people to use their <b>experience and intuition</b> rather than adhering strictly to written plans or standards; when might this <b>cause problems</b> ? Where might our " <b>rule-book</b> " <b>actually hamper</b> the achievement of our organisational goals?

<b>Summarising Questions</b>	
19.	What “ <b>unwanted</b> ” occurrences (including those perceived as “ <b>inconceivable</b> ”) might affect our organisation?
20.	What evidence exists to show that our organisation’s culture, structure or processes do NOT <b>provoke errors</b> or rule violations?

As a result of the interviews the key issues identified were:

- The questions were found to have practical utility. A clear link to the UK’s Combined Code was also established.
- Each question could be used as a portal into the existing body of knowledge.
- The question set could be seen as being a coherent whole. As a result of research, potential clashes within the process were identified. In particular the clash between the practice to manage legal liability and to manage potential sources of unwanted occurrences would seem, in some circumstances, to be at odds with each other. It would seem to be important that for successful risk governance these issues be identified and resolved.
- A clear need emerged to categorise those within the risk governance/management community in order for them to appreciate the level of knowledge and understanding that exists amongst those trying to communicate these issues. This is seen as important as it facilitates effective cross communications.
- One of the most significant findings was the importance of the relationship between the potential user of the questions and the questions themselves. It became clear that without the required openness to new thinking, no formulation of questions would stimulate new ways of thinking. Therefore, the respondents’ attitude towards the questions seemed to be important. It determined whether they asked themselves particular questions, or whether they went on to the next steps which would be to ask themselves what were the questions they should be asking themselves. This can be seen to link directly back to the format of Project 2, which was structured around failure to ask, failure to appreciate and failure to act.
- Linked to the respondents’ attitude towards the questions was their desire to learn. While some respondents exhibited a strong desire to learn, others showed none. Evidence from this research is that the existing body of literature has had little penetration into this potential community of users. Another important finding was that all the respondents were looking for a distillation of the existing work rather than exhibiting any interest in examining the original academic papers. This would suggest that if the work were to reach this audience then it must be synthesised into more condensed packages.



- The final issue identified was that “knowing” did not automatically lead to the appropriate action being taken. Within some literature the authors expressed surprise that when an organisation knew there was potential for certain unwanted occurrences to occur, that they had not taken the appropriate action to prevent them. This research confirmed that while knowledge may exist, this may not in itself lead to the appropriate action being taken. This research now needs to be linked to work that examines this issue.

In summary, Project 3 operationalises the issues identified in Project 2 and these operationalised questions can be seen to have practical utility. In addition, the work has created a coherent whole that provides a portal through which the original research may be accessed. However, it is considered unlikely that practitioners, in general, would wish to access the original research in its academic format. Work therefore needs to be done to present the original academic work on risk governance issues, in a format that is more digestible to the practitioner community, who might benefit from knowing about it.

## **Risk Governance v. Risk Management**

The research did identify how risk governance was, in practice, significantly different from risk management. It identified that those involved in governance are firstly distanced from the activity that generates the risk and secondly are unlikely to be experts in every potential type of risk. Therefore they need to consider themselves to be investigators rather than experts. This means that in their role of investigator they need to concentrate on asking challenging questions of those reporting to them. This suggests that the skills they should have are a clear understanding of the mechanism that may generate risks and the ability to ask penetrating questions and be open minded enough to probe all the organisations’ assumptions.

## **CONTRIBUTION**

The main contributions that this research is seen to have made to the field of risk management are as follows:

- It has formulated a coherent whole out the multiple definitions of risk, thereby contributing to that field of knowledge.
- It has identified that there is a significant practical difference between the concept of risk management and risk governance.
- In a critical evaluation of previous work, it has identified that research has failed to distinguish between the multiple paradigms used in areas of risk management.
- In the risk literature there has been very little discussion of paradigms used when discussing risk. Renn (2008a) had previously identified three approaches (Precaution-based, Risk-based and Discursive-based) to risk management. This work has identified three dominant fields of risk

management (project, process and scenario) and suggests that a combination of these two dimensions generates nine different ways of seeing (paradigms) or examining the issues at hand (this is not to suggest that there are not others as well). The identification of these nine paradigms may offer one explanation as to why cross-understanding within the field of risk management is difficult and goes further to suggest that, if they continue to go unacknowledged, this may lead to incorrect deductions being drawn.

- It has identified that Key Risk Indicators are as much a performance management tool as they are a risk management tool, thereby establishing a closer link between the two fields.
- It has, for the first time, synthesised a body of literature relating to risk governance.
- It has, for the first time, looked to develop this field of knowledge into a coherent whole, thereby helping to make the existing body of knowledge more accessible to practitioners. It offers a structure, based on 20 questions generated by the operationalised themes derived from a synthesis of the literature. These questions have been shown to have practical utility amongst a sample of the target audience.
- It suggests an approach that enables a way that the various disciplines related to risk management may be considered in an uniform way and the integrated with fields such as performance management. This is seen to be necessary if the subject are to have practical utility for those involved in organisational governance activity. In developing a coherent set of 20 questions (organized into 4 categories), this research has developed the first instrument for a coherent and meaningful approach to resolving the issue of “failure of foresight”. As such it provides the first step towards facilitating a more effective form of risk discourse appropriate to the needs of governance This approach helps to make the process of risk management more forward looking by its use of questions.

In summary, this work contributes to both the body of knowledge and to practice. It has examined the knowledge that exists from the perspective of putting it into practice; by doing this we have developed further understanding of the existing knowledge and have learnt more about its limitations. This will enable those involved in the discussions of risk to relate each definition to one another and thereby enhance cross-understanding within the stakeholder group.

## **Significance**

The genesis of this work is two of the phases (perceive and recognise) within Turner’s Disaster Incubation Theory (Turner, 1978). Failure at these phases has been labelled by Turner as Failure of Foresight (Turner, 1976b). It should be noted that within crisis management literature this is referred to as the “prodromes” period - from the Greek for “running before” (Fink, 2000). The

failures to be forestalled are disasters or crises which are likely to have been categorised as the highest level of concern but also the highest level of improbability and yet, while being perceived therefore as inconceivable, still happen. In hindsight, the build-up to these events can be clearly identified, yet in foresight they have been missed. Most of the work to date has looked backwards from the event (hindsight) in order to identify why they occurred. This research looks at the issue from the perspective of foresight in order to examine the process as it occurs.

This work has significance for both academics and practitioners.

For academics, the significance is that it should make them question, in a new way, the assumptions that they have about their work. In particular they first need to question the paradigm that they use in order to see its limitations. Secondly, they need to appreciate that what they see as foresight may differ considerably from what a practitioner sees as foresight. Therefore, when academics suggest that their proposition has value in foresight for practitioners, this assertion needs to be tested more rigorously.

There is also a significant finding in the relationship between knowledge and practitioner. The assumption that knowing is enough in itself has repeatedly been shown to be false; academics theorising on risk management need to be more rigorous in the way they show their work to have a practical utility.

For practitioners, the significance is that this work recognises that they have a different perspective, for example they do not expect “answers” (“proven truths”) for academic work to be useful to them. Therefore the significance of this work is that it concentrates on providing questions that have practical utility, rather than proven truths. Of more direct significance to practitioners therefore are the “thinking tools” or frameworks that this research provides, which are designed to help them see the context of their actions in a new light.

## **LIMITATIONS OF THE STUDY AND AREAS FOR FURTHER RESEARCH**

The final section of this chapter looks at the limitations of this research and discusses areas for further research. This research used qualitative research techniques in order to understand how a group of practitioners may derive practical utility from the body of existing knowledge. As with any research of this nature, there are limitations to the design, the methodology and the analysis. In order for others to judge the significance of this work, it is important to make these limitations clear so that the work can be judged in context. The limitations also offer potential areas for further research work.

### **Limitations**

One of the main limitations of this research is that all the analysis is performed by a single individual and therefore does not have the requisite variety needed

to add the depth provided by alternative perspectives. This limitation is inherent in this type of research. Only through further testing over time will we see the robustness of this work.

The research was based on English language publications and all discussions were limited by the use of the English language. Efforts were therefore made to ensure that the scope of work used was wider than that produced within the UK and US, despite their pre-eminence. Journal articles with authors from non-English speaking countries were always given close scrutiny for relevance rather than reliance on specific key words.

The research is limited by its focus on practice determined by the UK's Combined Code. While this might be seen as being geographically limited, as a "principles-based" code, it is likely that the results of this research are generalisable to other domains which also utilise a "principles-based" code.

The empirical research was also limited by the sample population used. The respondents were self-selecting and therefore it cannot be ignored that they may have had their own agenda. While it is recognised that each individual will bring their own bias, it is considered that this will not have adversely affected the result overall. This statement is justified because the questions are not offered as being definitive but rather that some are seen to provoke discussion either internally, within an individual, or externally, between the individual and their group.

Another limitation of the empirical research was seen to be the candour and openness shown by each respondent. It was clear that the subject of risk does cause a defensive reaction in many people. It was not therefore possible to take all the comments at face value; they often needed to be interpreted and therefore some bias introduced by the role of the researcher has to be considered.

Finally, the process of coding and data analysis is, to a large degree, subjective. During the synthesis carried out during Project 2 and the operationalisation of the questions during Project 3, while each process involved multiple stages and consecutive criteria, the final judgements must be recognised as being subjective. However, as the evaluation of practical utility was based on the judgement of others, this limitation is not considered to damage the overall result.

### **Areas for Further Research**

This research has opened up the scope for future research on this subject area. I have limited my comments here to the work that I have been prompted to consider.

The first issue I regard as worth examining is to debate the advantages and disadvantages of the reliance on rule-based systems for risk governance/ risk management. The work would be designed for publication in a practitioner journal. The purpose of this work would be to clarify, in my own mind, the strengths and weaknesses inherent within a rule-based approach in order to

develop and enhance understanding of these issues across the community of interested practitioners and academics.

The next task worth undertaking is to develop the idea of providing a portal into the existing research. Most of the work has been done; it is now a question of reviewing those texts already identified during Project 2 in order to précis each and present the information in such a way as to be accessible to general practitioners through business Masters programmes (as a potential target population).

The idea would be to optimise the “message” for its intended target audience. As a practitioner, I would see this as being “communications”; as a scholar I now understand this to be, in Boyer’s (1990) terms, pedagogy. A useful piece of research may therefore be to explore pedagogy to see how this body of existing work may help in optimising how the data is presented to practitioners.

As this research is focused at the board/executive level within organisations and looks to provide ways that may encourage ‘thinking about how to think about risk’, it may be worth reviewing the literature on executive behaviour. The aim of this work would be to understand what prompts and what prevents executives seeing, appreciating, acting and learning.

The final area of research is the concept of “synthesis”. Implicit in the body of work that I examined was that organisations failed to synthesise effectively the data available to them. While academics offer criticism, they do not offer anything more constructive. The question therefore becomes, whether scholarly studies have anything to offer in devising a more effective methodology for synthesis.



## CHAPTER 2 - SEVEN DIMENSIONS OF RISK

### Abstract

Before decisions can be made, parties to any discussion need to be clear about the meaning of the terms that they are using. Discussions about risk would appear to be hampered by a combination of the ambiguous nature of the term itself and the hidden drivers of implicit assumptions and mix of perspectives brought to the discussion by each party. This paper identifies areas where the implicit should be made explicit and provides frameworks to facilitate any such exercise. The paper examines how the concept of risk might be conceptualised during risk discourse. The proposed framework is designed to enable general managers to explore the issue of risk in a more structured way. It provides the basis on which to debate the various risks that might affect their endeavours in order to facilitate the “Cross-Understanding” (Huber & Lewis, 2010).

### INTRODUCTION

*‘The most important part of the safety enterprise is thinking about how to think... about’ risk (Wildavsky, 1988:2)*

The construct labelled “risk” receives extensive consideration across a wide range of academic literature. As well as the literature on the general area of risk management, the subject of risk is specifically contained within literature covering: (1) accident investigation, (2) crisis management, (3) business continuity management, (4) operational risk management, (5) process risk management, (6) project and programme risk management, (7) resilience and (8) high reliability. In addition, it may also appear within any area where unwanted, unintended or unanticipated inputs, occurrences or consequences that have negative connotations have a potential to emerge.

The term “risk” would seem to embrace a large number of conflicting ideas. This ambiguity might be seen to go back to the origins of the term. Bernstein (1998:8) believes that ‘The word ‘Risk’ derives from the early Italian ‘risicare’ which means ‘to dare’. In this sense, risk is a choice rather than a fate.’ This captures the idea of risk providing opportunities that may lead to reward as well as possible downsides. Mythen (2004:13) sees the word coming from the Arabic word “Rizq” meaning the ‘acquisition of wealth and good fortune’ Damodaran (2008:6) draws a link to the Chinese symbol for risk which is a combination of danger (crisis) and opportunity, representing the downside and upside of risk. Risk is often taken to be the jeopardy that is juxtaposed to the benefits associated with an activity.

There is ambiguity over the very meaning of the term “risk” and, as this paper will show, there is still no consensus as to what the term “risk” embraces. Ramgopal (2003) agrees that the ‘use of the term risk is ambiguous.’ This

sentiment is further supported by a number of other authors, including: Milburn and Billings (1976:116), Adams (1995:7-9), Lupton (1999:1-7), Gigerenzer (2003:26), Ward and Chapman (2003:101) and Renn (2008a:2). There are several definitions of risk (detailed later in this paper) which, while superficially concurring, provide clear differences in emphasis. This ambiguity creates difficulties for managers who need to conceptualise and communicate these core ideas.

Few authors disagree that a significant part of risk is a mental construct. Renn (1998:49) argues that 'risks are always mental representations of threats that are capable of claiming real losses'. A question therefore comes, as to how these mental representations of the issues form part of any discussion of a subject necessary to generate the cross-understanding (Huber and Lewis, 2010) needed to enable sufficient mutual understanding so that agreed action can take place. It is therefore important for any paper on risk to define clearly how the author perceives, and then intends to use, this key term.

In order to facilitate greater cross-understanding within risk discourse (Renn, 2008a:65-66), the purpose of this paper is to examine whether the many apparently contradictory definitions of risk, form part of a more complex overall picture, and are, in fact, consistent rather than contradictory. The paper claims that the existing definitions can all be embraced within a wider framework that provides seven dimensions to risk. The significance of this is that both academics and practitioners are able to take each definition (or construct) as being part of a wider overall picture. This has the advantage of being able to start to address the greater complexity of the issue rather than trying to reduce it to a simplification of this complex issue which may be labelled as a "pretence of knowledge" (Ghoshal, 2005:77).

Wildavsky (1988:2) sets the tenor for this paper, the purpose of which is to help people think about how they think about risk. In this paper I examine a series of phenomena and paradigms associated with risk in order to identify areas where the implicit could be made explicit. By looking at the question "What is risk?" I identify coherence (around the construct of temporal complexity) in a seemingly disparate set of risk definitions. As risk is context dependent, the second section examines the key phenomena that frame any risk discourse and suggests that these need to be made explicit if a better cross-understanding is to be achieved.

The paper starts by discussing the context for this paper and then links it to previous work in this subject area. Secondly, it describes the approach that I will take in order to make my methodology transparent. Thirdly, I look at the ways in which the word "risk" is used within academic and management literature in order to identify the ambiguity inherent in its current usage. Fourthly, I describe the method that I will use to construct an analytical framework to enable a pattern of use to be identified and then finally, I conduct the analysis in order to identify any distinct pattern of use. I shall, however, start by setting the context within which I shall be examining the concept of risk.



## CONTEXT

As with any other discussion of risk, this paper needs to establish the context within which it is set. Therefore, for this paper, it is necessary firstly to identify the ontological construct within which the discussion is taking place. Secondly, it is necessary to identify the perspective from within which the subject has been examined.

### Ontological Setting

The word risk may be seen to be amongst the most widely used words, with the greatest number of meanings, in the English Language. In understanding the term, the first issue to be tackled is whether risk is a tangible “thing” or an intangible “mental construct”.

At the more tangible end of the spectrum are the engineering sciences where, at a more general level, risk is defined using a succinct phrase or by using a simple tripartite format (e.g. Risk = Probability x Impact; using quantitative methods to resolve technical problems: see Table 5 for other examples). Each type of definition is used, in turn, in order to develop a clear understanding of the concept. However, as will be demonstrated, risk is more complex than these simple definitions might imply.

In his contribution to the debate about risk, Renn (2008a:110) states that ‘Perceptions have a reality of their own’. He goes on to characterise these perceptions of risk as a fatal threat/ stroke of fate/ personal thrill (test of strength)/ a gamble (game of chance) and an indicator of insidious danger (early warning indicator) (Renn, 2008a:110-117). Post-Modernist writers (such as Lupton 1999; Mythen, 2004) see risk as a device to maintain cultural boundaries (referred to as the “Cultural-Symbolic” debate), as a way to maintain order through self-discipline (referred to as the “Governmentality” debate) or whether the benefits of technology are worth the risks involved (referred to as the “Risk Society” debate). According to Mythen, (2006:13), Giddens sees risk as a political concept, as it is used to attribute *blame*. These are all seemingly legitimate uses of the terms which have their own detailed warrants.

Renn (1998:49) states 'both extremes, the constructivist and the realist perspective, miss the point, as risks are always mental representations of threats that are capable of claiming real losses'. I argue that this requires an “ontological oscillation” (Burrell and Morgan, 1979:266) between being a constructionist (in order to understand risk) and a positivist (in order to manage it effectively and efficiently). This approach was justified elsewhere by Snook (2000:76) in his award winning Harvard PhD dissertation.

### Risk Management as Part of Performance Management

The next step is to articulate the perspective used to examine the issue of risk. There are two opposing views as to the relationship between risk and reward associated with risk management. Many practitioners in the risk management arena believe, as Ramgopal (2003:22) asserts, “Best practise regards risk as

encompassing both threat and opportunity”. Others couch risk management in terms of threat management and, in common usage, risk is associated with “threat” or “harm” which is seen by some to lead to a pessimistic threat orientated perspective.

The literature provides a further ambiguous mix involving performance management, risk management, opportunity management and uncertainty management (Ward and Chapman, 2002:1); they are all used to cover the dialectics of risk-reward which is also articulated as either cost-benefit (Gigerenzer, 2003:76; Sheffi, 2005:14), upside-downside or opportunity-threat (Browning in Hillson, 2007:319). However, as Ramgopal (2003:22) acknowledges, ‘Strategies for managing project uncertainty cannot be divorced ... from strategies for managing the project objectives and associated trade-offs’. The literature also gives examples, such as Bobker in Hillson (2007:68), who insists that risk should only refer to adverse events. The language is enriched (or maybe just complicated) further by such writers as Ward (Hillson, 2007:212) who uses the term “uncertainty management” to embrace “risk management” and “opportunity management”. This then leads to the question as to what differentiates “uncertainty management” from “performance management”.

To others, all management is risk management. Shaw (2005:23) cites this as the view of the Canadian risk management pioneer Douglas Barlow, an executive with equipment manufacturer Massey Ferguson. Charles Handy has said something very similar: ‘Risk management is not a separate activity from management, it is management ... predicting and planning allow prevention ... Reaction is a symptom of poor management’ (Merna and Al-Thani, 2008:44). Hollnagel (2009:18) is even more succinct: ‘Instead of seeing successes and failures as two separate categories of outcomes ... they are but two sides of the same coin.’ This sees the “risk-reward” dialectic as being the most fundamental of all management dilemmas; that every benefit has associated jeopardy, some of which are obvious and others being more difficult to identify. This has been categorised by Adams (2007:38) as (1) perceived directly, (2) perceived through science (measurable) and (3) virtual risks (an act of faith). From this, I therefore have adopted the view that all benefits have associated jeopardy (or risks) where some of these risks are more obvious than others.

Given the risk-reward dialectic as a basic assumption, we need to consider how this risk performance might be monitored. Within the performance management field, Calandro and Lane (2006:38) recommended that ‘firms utilise two scorecards, one for performance and a separate one for risk’. Their arguments are based on (1) the complexity of combining the two, (2) that the people in departments that measure risk and performance are normally separated, (3) that the separate scorecards can balance managers’ time between performance and risk, and (4) risk and performance can resemble one another therefore separate scorecards can delineate between the two subjects. They do, however, go on to say that “if separate scorecards are adopted, it is strongly recommended that each scorecard be constructed within a common framework.” The question this leaves is whether, as benefit and jeopardy are intimately linked in practice, the management practice of

separating them is dysfunctional? Their argument as to the complexity, however, is well made and, as Perrow (1999) warns, complexity, as an attribute, can lead to other risks. However, this is a classic risk-risk situation where the risk of complexity in combining the two factors must be weighed against the risk of failure in coordination if the two are separated. Therefore, for clarity, while I accept that risk and reward are indivisibly linked, in this paper I associate the term “performance management” with the benefits derived from the system and associate the term “risk management” with any jeopardy inherent in the activity.

Therefore, in summary, the ontology to be used is to accept that while risk may be a mental construct, it does have real, tangible consequences and that it is from the perspective of managing these issues that the term “risk” has been examined.

## **DESCRIPTION OF METHOD**

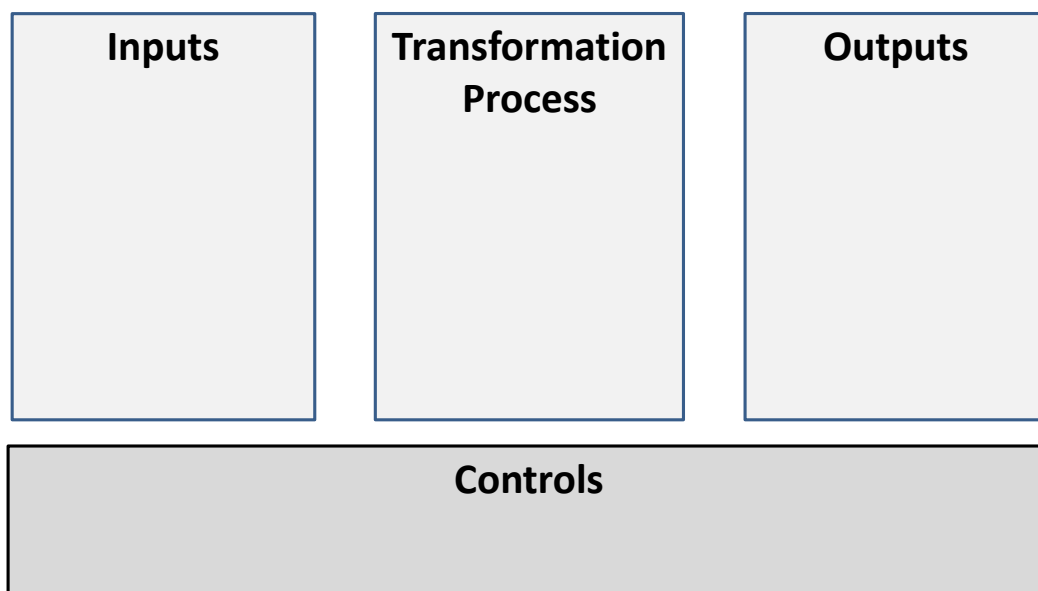
While this is a conceptual paper, as has already been said, it takes a performance management perspective, i.e. the purpose of the method is to provide a mechanism by which those engaged in risk discourse may develop a cross-understanding of the construct of the term “risk”. Given the wide range of meanings attributed to this term, the question then becomes how might these be reconciled? In this section I propose to use a systems framework as a means of relating the various usages of the term.

The purpose of the proposed method was to identify any pattern in the use of the term “risk”. The aim was to distil the pattern into a framework which might be useful by bringing structure to risk discourse. The structure does not look to provide a “cause-and-effect” model but simply a framework for debate. Karl Weick (2004:27) has stated that: ‘By placing a meaningful frame around flows of events, (in his case) normal accident theory allows people to better grasp and analyse the complexities of technological organisations as they face the unexpected.’ I am looking to apply the same logic to the understanding of risk. Weick applauds Perrow's Normal Accident Theory for the fact that it frames, it links, and it provokes; while noting the warning from Henri Theil that ‘Models are to be used, not believed’ and from George Box that ‘All models are wrong: some models are useful’ (Hubbard, 2009:213), I have the same ambition as Weick for this risk framework. This is to ‘let people get their bearings when they observe complex organisations that face the unexpected’ (Weick, 2004:27). Weick provides an example of how he used Perrow's 2 x 2 matrix (based on loose or tight coupling within linear or complex transformation systems) to help him ‘understand how and why the Centre for Disease Control misdiagnosed West Nile virus when it first appeared’. He says: ‘one way we get our bearings in this investigation is to assign the incident to a cell in Perrow's matrix. In a way, it really does not matter where we assign it, because the act of assigning itself gets us talking, digging, comparing, refining, and focusing on the right question’ (Weick, 2004:27). The framework that I propose is designed to enable general managers to explore the issue of risk in a more structured way and provide them with the basis on which to debate how the various risks might affect their endeavours.

Hollnagel (in Hollnagel et al., 2006:9-17) provides a history of accident analysis. In his text he explains how initially accidents were seen as an “act of God”. This evolved into a hunt for “cause and effect” linkages which, in their turn, were considered to be too limited by the underlying assumption of a “closed system”. Hollnagel’s argument is based on the concept that “open systems” are subjected to the influence (both weak and strong) of everything within an environment; Hollnagel might be seen to be part of what is referred to as a Socio-technical design school of thought. In more recent work by Leveson and others (Leveson et al., 2009:227; Marais et al., 2004) they also reject the “cause-effect” model as being too simplistic and use a system methodology in order to capture the complexity of interactions. While Hollnagel and the others limit their theorising to the accident field and related subjects, I extend this logic to cover wider aspects of risk management.

Established authorities on management of risk (Renn, 2008a; Slovic, 2000; Waring and Glendon, 1998) all use a systems type framework to provide ‘a structural tool to illustrate the ... process, and not (as) an empirical model of how (in this case) communication is factually organised’ (Renn, 2008a:209). The literature on Normal Accident Theory (Perrow, 1999:356-7) and High Reliability Organisations (Roberts, 1990) is also centred on a systems approach. I believe by adopting a similar approach, I will be better placed to communicate my ideas more effectively.

In addition to those in the Socio-technical design school, a systems approach has been used elsewhere to provide structure for the discussion of risk (see Renn, 2008a:159-172; Haimes, 2009). Given that system models can become very complex, this analysis will use a simplified system model (see Figure 2 as the basic analytical framework).



**Figure 2 - System Framework**

It is important that this analysis embraces as wide a range as possible of meanings attributed to the term “risk” in order to determine whether there is any consistency within their pattern of use. To this end, a non-probability sampling of definitions has been taken from the literature. Stake (1995) contends that it is often more beneficial ‘to learn a lot from an atypical case than a little from a magnificently typical case’. Consequently I am not concerned with any quantitative analysis looking at the frequency of use of any definition, but just at the fact that the term has been used in a certain way. The rationale for such a deliberative sampling method is that extreme and atypical cases tend to give more information and thus allow the phenomenon of intervening factors to become more ‘visible’ (Stake, 1995).

The simplified system is consistent with using the metaphor of “Organisations as a machine” (Morgan, 2006:11-32). This approach uses different terminology; “before” becomes “inputs”, “events” become “transformation”, “after” becomes “outcomes”. The systems approach introduces the concept of “controls”, which is consistent with “objectives and targets” within the performance management paradigm. These basic categories therefore form the analytical framework that will be used to examine how the term “risk” is used (see Figure 2). This framework will provide a structure against which the usages of the term could be mapped. Aven et al. (2011:1077) use the metaphor of a rock and a victim to describe how the ontology of risk may also be interpreted in a similar way. An example of where such an approach has been used by practitioners is the ‘Operational Risk Modelling System Dynamic Approach’ found in Hoffman (2002:298).

This research uses the framework to map the various definitions of risk. The analysis starts with the simplest definitions and then, in an inductive process, adds in the more complex ones. Finally, the process adds into the framework those factors which provide the necessary context to the discourse.

## **ANALYSIS**

Having established the method to be used, this section describes the inductive analysis process. It starts by establishing the range of terms used to define risk, it then maps the simpler definitions on to the framework, and finally it adds the more complex definitions. The section ends by describing the frameworks that evolved from the analytical process.

### **Range of Definitions**

Risk appears in many forms in many literature fields. This paper will concentrate on only three fields perceived to be the most relevant to performance management. These include risk management, the management of uncertainty and organisational resilience. This paper will look to extract the common features of these three different fields in order to develop a framework for risk discourse.

The term “risk” is ambiguous ‘Despite its global omnipresence, risk remains an opaque and disputed concept’ (Mythen, 2006:1). It has been given a multitude

of meanings by its users. Leitch (2008:30-31) states that 'there is a big difference between 'some risks' and 'some risk'. Leitch sees risks as countable entities' and risk as being 'exposed to uncertainty that we care about': one is an entity and the other an abstract. Woolgar (1980:242) points to the 'limitations of language'; while inhabitants of the Arctic are said to have many words for snow, the English language provides only one. It is the same for the concept of risk; while the term has many meanings attributed to it, the English language has only one word to cover this complex idea.

The three main usages of the term in literature are:

- 1) Risk as "an event" - An uncertain event' (OGC, 2007), (see also Dallas, 2006:371; Bartlett, 2002:131).
- 2) Risk as "uncertainty" (also encapsulated as "likelihood" or "possibility") - 'uncertainty of outcome', (HM Treasury, 2004:49), also see (Merna and Al-Thani, 2008:11) and Frank Knight (1921) cited by Damodaran (2008:5).
- 3) Risk as "an effect". This effect being 'possible consequences' (Holton, 2004:20), or as a 'Business Impact' (effect) (Richard Flynn in Hillson (2007:370)).

However, there are examples of risk being given more abstract meanings. Four of these include: Cleden (2009:121) who defines risk as 'an expression', Holton (2004:22) who defines it as 'exposure', Chapman and Ward (1997:7) who define it as 'the implications' and Dean in Lupton (1999:138) as a 'form of rationality'. These examples illustrate the diversities of constructs that have been given to this single term.

Risk, as a term, is linguistically flexible. It therefore may be considered to be too ambiguous to be used on its own. Risk appears always to need to be amplified in order to resolve these ambiguities and apparent contradictions. However, Mythen (2004:14-15) gives three reasons why 'trying to define risk may prove to be something of a red herring: firstly risk will differ over time and place, secondly risks for some can be construed as opportunities for others, and thirdly catchall definitions of risk tend to concede concrete meaning. For these reasons I will not try to define risk. What I will do, however, is to identify a construct or the dimensions that embrace the many uses of the term "risk".

### **Simple Definition**

The definitions plotted (Table 4) were selected from both academic and practitioner literature. They were taken from the following references:

**An Uncertainty:** Frank Knight (1921) cited by (Damodaran, 2008:5)

**An event:** (Aven and Renn, 2009:1)

**Form of rationality:** (Lupton, 1999:138)

**Questionable Assumption:** (Baxter 1996)

**Uncertainty:** (Holton, 2004:20)

**Failure:** (Malik, 2008:88)

**An implication:** (Chapman and Ward, 1997:7)

**An effect:** (Hillson and Simon, 2007:224)

**Exposure:** (Holton, 2004:22)

**Volatility:** (Hubbard, 2009:84)

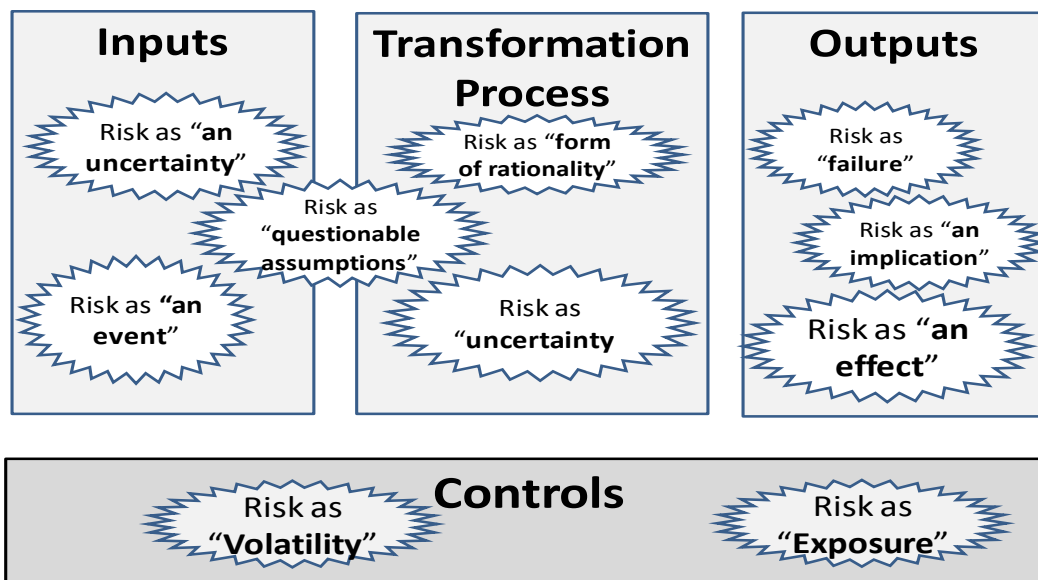
#### **Table 4 - Quotes Used**

The purpose of the analysis is to identify whether all the definitions fall into one sector or are spread across the spectrum of the system. The analysis took each definition of risk and categorised them in terms of whether they may be perceived to be (1) an input concept, (2) a transformation concept, (3) an outcome concept or (4) part of the control mechanism. As the language used within risk management is still very immature (many of the words used have no generally accepted meanings), the rationale behind the placing of the various usages of the term “risk” was not considered to be as important as the result which indicates that meanings can be associated within each of the defined areas.

Some usages were seen as being part of the concept of input; where risk is seen as an event or a “cause” of an effect. (It should be noted that risk as an uncertainty is also an event.) A “questionable assumption” is perceived as borderline between being an input or part of the transformation process. More clearly within the transformation process is risk as “uncertainty” (it is seen as being an uncertainty or a probability within the transformation process) and risk “as a form of rationality”. Those that were perceived as falling in the output category were risk as “an effect”, “an implication” and “failure”. Finally risk as “exposure” and “volatility” was deemed to fit into the control box. Risk as exposure was interpreted as the level of risk or the amount of risk to which the organisation is being or will be exposed; this was seen as a control total and therefore placed within the control area. Risk as exposure has been interpreted as being consistent with the many other terms (such as risk appetite (Marshall, 1995:47), risk tolerance (Shaw, 2007:41) and risk profile (BS31100:2008), which have been used to express the amount of risk that is expected or acceptable; these are all seen as being a control total. Risk as exposure is therefore also seen as being consistent within this proposed framework.

Milburn and Billings (1976:122) are even more explicit. They believe that 'It is ... worth pointing out that risk can enter in at any point in the process' and that 'If we focus only on one phase, we miss important phenomena'. Although Milburn and Billings were talking about the decision-making process, this paper will extend this idea to all processes and will look to see whether the assertion remains valid. I therefore will look to base my analysis within a process setting.

As stated earlier, the exact placing of each concept is not considered to be as important as the fact that definitions of risk can be seen to fall within all four areas of the system boxes and therefore risk should not be seen as a single concept relevant to a specific part of any transformation system. Risks can be seen to be present in any and every part of the system. What this exercise does confirm is Mythen's (2004:14-15) contention that 'Risk will differ over time', that there is a temporal dimension to the complexity of risk. The importance of the time dimension is supported by Hollnagel (2009:14 & 17); he points out that "error" may be incurred if an action is untimely. Risks exist from the beginning of a process through to its conclusion, irrespective of whether the temporal dimension is short, as for example within electronic systems, or long, as seen in the environmental debate. The analysis produced the layout shown in Figure 3

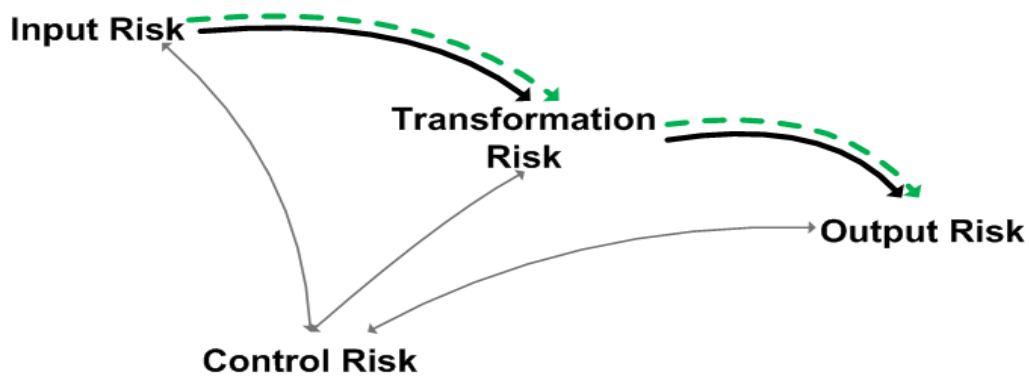


**Figure 3 - Defined Risks**

As a result of Figure 2, it is therefore proposed to consider risk as an input, risk during the transformation process, risk as an output and risk as control totals.

Figure 4 shows the basic temporal construct.





**Figure 4 - Temporal Complexity**

Up to this point, it has been shown that the term “risk” has been used to mean phenomena in all four boxes taken from a basic systems approach. This confirms that the term has too wide a utility to be used meaningfully on its own. Therefore, in order to avoid confusion, participants in risk discourse should be encouraged to articulate whether the risk that concerns them is in fact an input, output, control total or within the transformation process itself.

### **Tripartite Definitions**

The next step in the analysis of risk is to examine a series of tripartite risk definitions (i.e. those articulated as “Risk = A (x) B”). The selection in Table 5 demonstrates further complexity.

<ul style="list-style-type: none"> <li>• <b>Risk = Probability x Magnitude.</b> (Slovic, 2000:232)</li> <li>• <b>Risk = Probability</b> (of Occurrence of Loss) <b>x Magnitude</b> (of Possible Loss). (Malik, 2008:48)</li> <li>• <b>Risk = Probability x Impact.</b> (APRA, 2008)</li> <li>• <b>Risk = Probability x S (damage scale).</b> (Stankiewicz, 2009:112)</li> <li>• <b>Risk = Threat + Vulnerability.</b> (Kovacich and Halibozek 2003:26)</li> <li>• <b>Risk = Threat x Vulnerability x Consequence.</b> (Cox, 2008:1749)</li> <li>• <b>Risk = Probability x Consequence.</b> (Van Well-Stam et al., 2004:45, Damodaran, 2007:6)</li> <li>• <b>Risk = Expected consequences + Uncertainties.</b> (Aven, 2007:433)</li> <li>• <b>Risk = Exposure + Uncertainty (which you care about).</b> (Holton, 2004:22)</li> <li>• <b>Risk is the possibility and quantum of loss.</b> [March and Shapira (1987) cited by Coleman, 2006:255]</li> <li>• <b>Risk is the probability of a material hazard circumstance occurring.</b> (Tulloch in Lupton, 1999:36)</li> </ul>
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**Table 5 - Examples of Complex Risk Definitions**

These articulations of risk combine aspects from all four system boxes. However they predominantly concentrate on the outputs (Impact, Consequence or Magnitude) and control boxes (examples of such words might be probability, frequency, magnitude or severity (see Haimes 2009 for example). These therefore need further analysis.

Such definitions of risk often suggest limits or control totals. This reinforces the place for a control box within the proposed framework. These scales articulate potential or limits of what might be expected to happen, or what might be deemed to be acceptable should it happen. All these scales are features of management control. They therefore fit into the control box within the framework. The numbers these scales represent at this stage are only hypothetical and are therefore not an actual social bad. They are encompassed in the term “risk exposure”. It should be noted, however, that if the term has represented the manifestation of an actual social bad, this would require them to be placed in the output box.

This leaves only the construct of the outputs requiring further examination.

The term “output” covers a more complicated construct. The term “result” (BASEL 2 in Hoffman, 2002:29; Hillson, 2007:230; Kates, 1985 cited in Renn, 2008a:98), “effect” (Hillson, 2007:230; Renn, 2008a:Glossary) and ‘impact’ (Renn, 2008a:2; Anderson in Hillson, 2007:19) are used to denote an immediate output. Then there is “consequence” (see Table 5 for examples) and finally, there is one further term that needs to be added to this risk lexicon; that term is “subsequence”. These five terms (“an effect”, “result”, ‘impact”, “consequence” and “subsequence”) seem to be used interchangeably to cover risk as an output. This raises the question as to whether these terms are the same or should each be given a different connotation. An example of one such temporal representation from practitioner literature is provided by Sheffi (2005).

Sheffi (2005:65) presents a structure which he calls a “disruption profile”. It has eight stages: (1) Preparation, (2) Disruptive event, (3) First response, (4) Delayed impact, (5) Full impact, (6) Recovery preparation, (7) Recovery and (8) Long-term impact. These stages combine events and reactions. Sheffi describes but does not define each stage. By extracting the stages which describe the event (Disruptive event, Delayed Impact, Full impact, Long-term impact) a synergy can be identified between the two approaches. Sheffi’s profile supports the assertion that the concept of output does require greater sub-categorisation.

The terms used by Sheffi do, however, give a sense of a temporal dimension, which is felt to be misleading because the words used lead to the impression that the timeframe in question is hours, weeks or even years. However, as some scenarios may play out the whole sequence in seconds or micro-seconds, the terms used by Sheffi may mislead or result in misinterpretation of the available data. I am therefore taking the idea of sequencing but replacing the terms used by Sheffi with the original terms of Result, Effect, Consequence and Subsequence. For these terms to be useful in differentiating component parts of output risks, they need to be given greater delineation. I now define these terms as follows:

- **Results.** The result is an initial outcome of the mechanism at play on an entity in creating the negative outcome. For example, if the mechanism at play is the continual flexing of a structure due to natural phenomena such as wind, the result of this may be that the structure becomes stressed.
- **Effect.** The effect is the end product of the result on the entity causing the negative outcome. Taking the stress structure example from above, the effect of the stress may be that it induces part of a structure to fail.
- **Consequence.** A consequence is the automatic effect (cascade effect (Leveson, 2004:244)) that will occur as the end product of the effect unless an intervention is made. Continuing the example from above, the consequence of part of the structure failing may be the total collapse of the structure.
- **Subsequence.** Malik (2008:55) talks of “subsequence” as ‘the overall impact on the stakeholders over the long term’. However, this use does not give a clear differentiation between “subsequence” and “consequence”. Gigerenzer (2003:31), on the other hand, talks of ‘subsequent decisions’; this is where a decision is made following an event. An example of such a decision would be to ground an aircraft type following an accident with all the knock-on or ripple effects that this might have. Haddon-Cave (2009:377) in his description of a sequence of decisions that he identified as leading up to the loss of Nimrod XV230 said that: ‘it is not surprising that something subsequently gave way.’ This latter use of “subsequence” does provide a clear differentiation. For the purpose of this work the term “subsequence” is therefore defined as “the consequence of a decision that follows an unwanted occurrence rather than being part of any cascade of events”.
- **Impact.** The term “impact” is reserved for an overarching term that embraces all negative outputs relevant to the matter in hand.

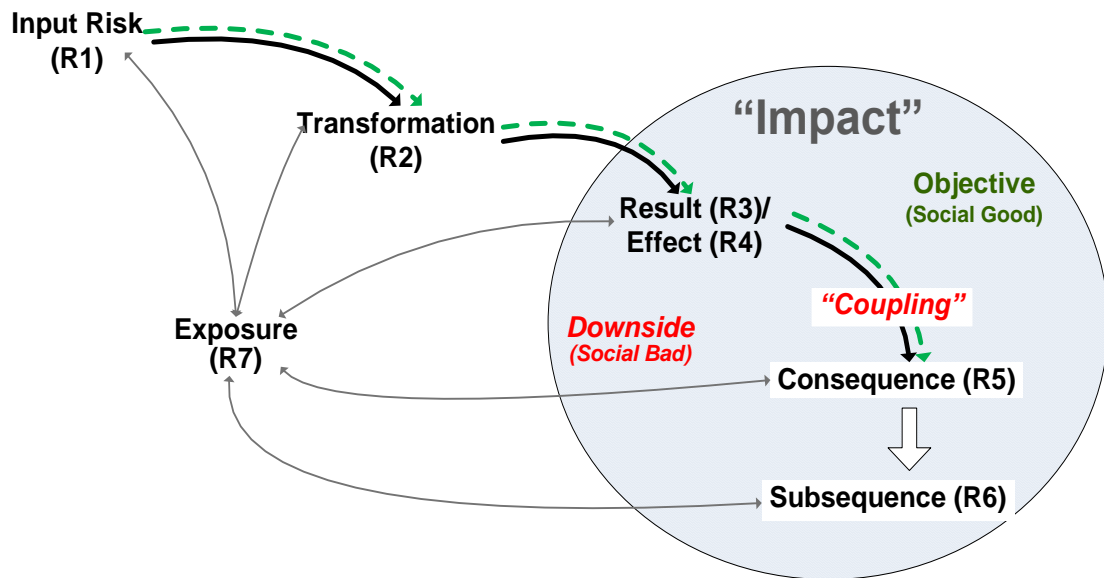
The basic sequencing from Input Risk through to Subsequence can be seen as having a temporal construct. The timescale in question for a particular risk will be context dependent. It may range from micro-seconds to millennia depending on the problem and the perspective of the viewer. An organisation’s capacity to manage such risk will depend on their ability and desire to intervene between any of the dimensions.

The question still remains, however, how, within this construct, might the term “risk” be conceptualised. While Hubbard (2009:8) defines risk as ‘the probability and magnitude of a loss, disaster or other undesirable event’, he then shortens his definition to ‘something bad could happen’. A descriptive representation of risk may now be “all that you are trying to avoid while pursuing desired outcomes” or, in short, “that which is unwanted”. This construct is already in use (see Gephart (2004:22), Toft and Reynolds (2005:15 & 21), Cooke and Rohleder (2006:213-216) and Sgourou et al., (2010:1020) who cite an additional three authors). An equally descriptive phrase would be ‘unwanted events that I care about’ (as risk is a personal construct, the “I” representing the person speaking at that moment.). This idea

of risk as the unwanted may also be phrased, within this construct, more descriptively as “the nightmare that you want to prevent”.

### Basic Framework

Using a basic systems structure, the seven dimensions of risk may be seen as: input risks (R1), transformation risks (R2), (unwanted) results (R3), (unwanted) effects (R4), (unwanted) consequences (R5), (unwanted) subsequence (R6), and as an expression of what is acceptable exposure (R7). This provides the basic structure seen in Figure 5, thus illustrating the multiplicity of meanings that have been given to the term “risk”.



**Figure 5 - Seven Dimensions of Risks**

Connecting the dimensions of risk are both pathways towards positive outcomes (social good), as represented by the dotted line, negative outcomes (social bad) as represented by the solid line and the concept of coupling (Perrow, 1999:89-93) between the two.

This now provides a framework around which the discussion of risk can take place. Discourse as to whether a particular phenomenon is an input, output, control or part of the transformation process should start the debate. However, there are still some further factors, which frame any discourse, that need to be considered.

### FRAMING RISK DISCOURSE

Having shown in the previous section, that risk cannot be considered to be a single entity, that there is risk in all things at once within a series of interactions that move a person or organisation from one state in the present, taking in what has happened previously, to another emergent state in the future, there are other factors that need to be included when framing risk discourse. These are considered next.

From reviewing the literature, factors have emerged that other authors have considered to be important when discussing risk. These factors, which arose sufficiently often that they could not be excluded from further consideration, were:

- Key Risk Issues: during the synthesis conducted as part of the previous section, a series of fundamental questions emerged which should be familiar to those versed in the literature or in business practice.
- Inclusions and exclusions: this subject is seen to be akin to “start” and “stop” rules (Simon, 1955 cited by Todd and Gigerenzer, 2003:149) in decision making theory. The ideas are also used by, amongst others, Snook (2000:189) and Vaughan (1996:391).
- Perceptual Construct. See Slovic (2000), Snook, (2000:80) and Vaughan, (1996:405).
- Boundaries: see Renn (2008a:135) and writers such as Hollnagel et al. (2006) and others who take a systems approach to the subject.
- Context: see Renn (2008a:105-118), Slovic (2000:190), and Waring and Glendon (1998:55).
- Stakeholders: see Perrow (1999:67) categorisation of victims and Boin and Schulmann (2008) for how changing public values can affect what is “acceptable”.
- Reward and Jeopardy: see Weick (2004:28), (Gigerenzer, 2003:20) Renn's (2008a:161) “violation of equity” or the term “moral hazard” used in economics.

Now I will discuss each factor in turn.

## **Key Risk Issues**

For practitioners these might be grouped under seven headings. The first is the risk of “failing to deliver” some required or desired benefits; here benefits might include the classic four: (1) increased profit, (2) reduced costs, (3) regulatory conformity or (4) a strategic objective. The risks here are built into what Vaughan (1996) calls “production pressure” or the pressure to deliver. The second is the risk presented by obstacles to benefits delivery. These are typified as “barriers to delivery” which may range from a lack of resources to the active interference by other parties. The third grouping is those undesirable inputs (such as mistakes in specification, design or materials) which should be avoided. The fourth is the unexpected interactions that occur within normal systems. The fifth is the foreseen unwanted by-products of delivering original benefits. These risks are typified by the toxic by-products of industry where the risk is labelled as pollution. The sixth category is related to the fifth, it involves the unintended consequences of delivering the intended consequence. An example of this may be a phenomenon where children have been so protected from risks that they are unable to assess risk for themselves and are therefore, in the longer run, at greater risk of harm (sometimes called “cotton-wool kids”). The final grouping is the risks which are perceived to exist because something

is unknown or uncertain. It is suggested that this grouping may be a suitable starting point for any discussion of risk. This grouping may be labelled: benefits, barriers, to be avoided, the unexpected, the unwanted, the unintended and the unknown.

## **Inclusions and Exclusions**

The purpose of the risk discourse is to prepare the parties involved for the decisions ahead; to ensure that their mental frame and the information available to them are appropriate for the decisions that they will need to make. Decision theory gives us an understanding of how individuals may establish such points of reference. It has been said that no matter what conversation you join, you will always join it in the middle. It is therefore important to establish what running conversation is being joined, define at what point you pick it up and the point at which you will exit. The concept used in decisions theory is that of the start and stop rule. It is thought appropriate to take this concept from decisions theory at this point because, while this paper does not look at the decision process, the purpose of developing a clear construct of risk is to enable more informed decisions to be taken at some point in the future. Therefore, in simple terms, this is the point from which information is thought irrelevant to the point that no more information is required in order to make a judgement (Todd and Gigerenzer, 2003:149). Snook (2000:219) describes how, in the context of determining the cause of the problem, a person's perspective affects the point at which they stop collecting data: 'Trainers stop when they find a weak skill that they can train. Lawyers stop when they find a responsible individual that they can prosecute. Political leaders stop when their constituents stop. Scientists stop when they learn something new' and how this stopping point is an 'artificiality' (Snook, 2000:189). Vaughan (1996:391) from her experience examining the antecedents to the Challenger accident warns that NASA's 'decision rule had become disassociated from its creators and the engineering process behind its creation'. This disassociation led to dysfunctional decision making which was at the heart of the accident. Therefore, my proposition is that, in order to make more informed judgements on risk, those involved need to understand what factors may affect their formulation of start and stop rules appropriate to the issue that they face. As these start and stop rules will exist tacitly, the proposition is that making them explicit would be helpful.

Next, I will therefore examine the types of issues that are likely to affect how the start and stop rules may be generated.

## **Perceptual Construct**

Slovic (2000) argues that risk is a mental construct. If risk is to have meaning, it has to be set in actual circumstances; if the temporal complexity of risk is to have meaning it needs to be set in a context. I will now examine the phenomena that frame discussions of risk. This starts with the concept of (1) framing and then looks at (2) boundaries, (3) context, (4) stakeholders and finishes with the place of (5) perceived rewards and jeopardy. In this paper I cannot hope to explore the detail on each; all I am attempting to do is to justify

its inclusion. I will explain each element and then show how it is linked to what I have already done.

Snook (2000:80), cited Bruner as saying 'The more expected an event, the more easily it is seen or heard'. Vaughan, (1996:405), adds 'how taken-for-granted assumptions, predispositions, scripts, conventions, and classification systems figure into goal orientated behaviour in a pre-rational, pre-conscious manner that precedes and prefigures strategic choice.' Nævestad (2009:157) goes a step further and defines frames of reference as 'The context, viewpoint, or set of presuppositions or evaluative criteria within which a person's perception and thinking seem always to occur, and which constrains selectively the course and outcome of these activities.' He goes on to say (Nævestad, 2009:158) that 'This definition emphasizes that our perception and thinking always occur within frames of reference and that these structure our perception and thinking. ... Our interpretations and judgments are based on frames of reference.' Haddon-Cave (2009:162) provides a clear example of why an understanding of this issue is important. When asking a witness why due notice had not been taken of a previous incident, the witness replied: 'We were responding to the fire that we had. There was nothing to arouse our suspicion that we had a particular problem in those areas with fuel leaks.' They were not looking; they did not see. Those using this proposed framework need to explore the frame of reference that they are using and therefore need to identify their potential "blind spots".

## **Boundaries**

The next issue to be addressed is that of boundaries. In an interview (Bourrier, 2005) Karlene Roberts (an authority on High Reliability Organisations) stated 'We think research efforts should be focused on the places where parts of organizations come together because we think many errors occur at these "interstices" (or "boundaries"). An interstice can be any place where parts must work together. These include shift changes, relationships between hospital pharmacies and wards, the relationship of organizations with their contractors, the relationships among geographically separate parts of organizations, etc.' Holt (2004:259) believed that there is a need for 'investing time and effort' in "'boundary drawing processes" as modern risks transgress sectoral, social, national and cultural boundaries. They may originate in one country or one sector, but will then proliferate into other areas and other sectors' (Renn, 2008a:135). Due to the lack of clear boundaries in the complex, global consequences of taking risk, instruments and tools of calculating risk are inadequate and inaccurate (Renn, 2008a:135). However, risk studies tend to be 'bounded by time and activity' (Valerio, 2006:26) and so, as Roberts suggests, are not well understood. Seen from a decisions theory perspective, this may come at the extremes, as the clear articulation of start and stop rules, to ensure that there is a clear understanding of what is included and what is excluded so that all assumptions and issues "taken-for-granted" are surfaced. Those using the proposed framework need to make clear the boundaries (both internal and external) that they assume or use for their relevance and criticality.



## Context

Many writers make clear the importance of context to any form of discourse. Reason (1990:44) says that, from a psychological perspective, human mental processes depend 'upon situation-specific as opposed to context-free information'. All risks should therefore also be seen in context (Renn, 2008a:105-118; Slovic, 2000:190; Waring and Glendon, 1998:55). Rather, 'what is perceived as risk and how that risk is perceived will vary according to the context in which, and from which, it is regarded' (Henwood et al., 2008:422). In his preface Snook (2000) states that 'A fundamental assumption of this study is that context and perspective are important'. He later adds 'people act in context' (Snook, 2000:26). Leveson illustrates that even apparently definitive terms, such as "reliable" are context dependent; she says 'Reliable, whatever that might mean in the context' (Leveson et al., 2009:235). Weick (1993) (cited March, 1989) by saying: 'decision-making is a highly contextual, sacred activity, surrounded by myth and ritual, and as much concerned with the interpretive order as with the specifics of particular choices' reinforces this idea. For Waring and Glendon (1998:7) 'Context ... sets the scene'. They divide context into external and internal. The external context includes aspects such as: (1) economies and markets, (2) public policy, (3) regulation and standards, (4) social, historical and political climate, (5) physical conditions on climate and (6) technology. For them internal context includes: (1) organisational structure, (2) culture, (3) power relationships, (4) resources, (5) risk cognition (perceptions), (6) strategy, and (7) motivations and meanings of success (Waring and Glendon, 1998:8)). Figlock (2002:26) cites work by Koys and Decotiis who developed the concept of "dimension-saliency" ... (where) choosing a subset did not dispute the existence of a larger set of dimensions, but just that some dimensions were more pertinent than others within a given context'.

Within the risk management process other writers make clear that context is not static – context changes. Leveson talks of the 'emergent safety properties' Leveson (2009:242) adds 'the context in which they (the systems) are being built have been changing' (Leveson et al., 2009:238). Weick (2004:30) also talks of 'actions that become wrong rather than start wrong ... emergent outcomes that are unknowable and unpredictable ... and transient constructs that necessitate updating'. This changing context leads to the necessity for what Weick and Sutcliffe call "mindfulness". They explain that

[M]indfulness is different from situational awareness in the sense that it involves the combination of ongoing scrutiny of existing expectations, continuous refinement, and differentiation of expectations based on newer experiences, willingness and capability to invent new expectations that make sense of unprecedented events, a **more nuanced appreciation of context** [my emphasis] and ways to deal with it, and identification of new dimensions of context that improve foresight and current functioning (Weick and Sutcliffe, 2007:32).



Therefore those using the proposed framework to evaluate risk management issues, need to be fully aware of (make explicit) the context in which they are working if they are to have any chance of making appropriate judgement.

## **Stakeholders**

The adverse impacts associated with risk that are most keenly felt, are those that, in some way, affect people (commonly referred to as stakeholders). Perrow (1999:67) includes four categories of victims in his list of stakeholders: his first-party victims are those who operate the system, his second-party victims are non-operating personnel (such as passengers), his third-party victims are innocent bystanders and his fourth-party victims are 'foetuses and future generations' (I would use this last group to cover friends and family of victims or those otherwise affected by the event). What includes or excludes such stakeholders from consideration is whether they care, or how much they care about the issue at hand. Leitch (2008:31) speaks of risk as being 'exposure to uncertainty that we care about'. Holton (2004:24) says the 'litmus test for exposure is not do we care? It is would we care?' (the connotation is whether we would care enough to take action); that is not if the group or individual is vocal about the issue now but are they likely to become vocal in the event that the unwanted impact manifests itself (referred to by Renn (2008a:161) as 'potential for mobilization'). This alerts risk managers to look not only directly at what might happen but what might be the consequences and subsequence of it happening, and identifying which stakeholder groups may be galvanised into action.

Boin and Schulmann (2008) document such a shift and attributed NASA's perceived failings that led to the loss of the shuttles Challenger and Columbia, as much to a changing public attitude towards space flight accidents, as to any change or diminution in NASA's processes for dealing with such risks. The authors detail the changing perceptions of NASA going from the early days of the Apollo missions to the time of the loss of the shuttle Columbia. He explains that there was a shift both within the organisation and within the public from post-World War II/Cold War warrior type endeavour to perceiving the NASA missions as a routine logistical exercise. At first, the perception was of brave men taking great risks to achieve great goals (and this inevitably led to some losses). This changed over time to the perception that shuttle flights were routine and the astronauts should be no more at risk than a truck driver. This change in attitude meant that the high visibility deaths of the Challenger and Columbia crews precipitated public outrage, which had its inevitable consequences for the political leaders, resulting in subsequent decisions curtailing NASA's future activities. This shift can also be seen elsewhere. In the UK, a series of accidents involving military aircraft have led to outrage amongst the families (who suffered severe consequence from the losses) whereas, in the past, this might have just been seen as inherent to the military lifestyle. This trend, which may be characterised as a rise in the social responsibility agenda for corporations, may lead to other unforeseen consequences; those involved in risk management at this level may like to take note of this trend and start to think of the adverse effects that this might

have on the way that they go about their business. The proposed framework should encourage those involved in the risk discourse to examine potential stakeholder interest across a wider temporal plain.

## **Reward & Jeopardy**

Tied closely to the stakeholder issue is the perception of reward and jeopardy associated with risk-taking activity. Amongst the stakeholders there is the question of how they perceive the allocation of rewards and jeopardy, associated with taking risks. This leads to the questions "who benefits .... (and) who pays the price?" (Weick, 2004:28). Harding (2005) cites the question posed by Shapiro and Stevenson (2005) when they ask 'who between the quarterback and a consultant has a higher predictive intelligence in their respective fields; their answer is the quarterback because he must live with the consequences of his decisions'. Gigerenzer (2003) describes how the price paid is not necessarily financial; the price may be paid in terms of pain, anguish or loss of opportunity. There may be a tendency for those involved in decision-making within risk management to focus solely on their own interests or those of the corporation in whose interests they are supposed to be acting. However, as the preceding discussion would suggest, wider consideration of other stakeholders may be of value; this issue is encompassed by the debate on "moral hazard" or as Renn refers to it, 'violation of equity'. He describes this as 'the discrepancy between those who enjoy the benefits and those who bear the risks' (Renn, 2008a:161). This consideration has several implications for practice: (1) It should prompt those involved in risk management discussions to map where the benefits accrue and where the jeopardy is placed to ensure that any issues of inequity are understood if not resolved at the earliest stages. The benefit for the decision maker would be that in the future there would be less likelihood of an iniquitous decision coming back and causing them jeopardy. (2) The issue of reward and jeopardy is not only relevant to the outcomes of the risk management decision making process. As with all decisions, risk management decisions rely on accurate and timely data. Enquiries into Columbia, Challenger, Piper Alpha and Nimrod XV230, to name but a few, all stress the importance of analysing near-miss data as a way of gaining forewarning of future mishaps. However, if efforts to enhance safety place those people reporting such near misses in jeopardy, they are unlikely to provide management with the essential available data. 'Management can (therefore) show their commitment to safety by creating a climate in which incident reporting is rewarded instead of punished', (Cooke and Rohleder, 2006:218-219). (3) Work on Normal Accident Theory and High Reliability Organisations has led to the conclusion that "By and large, safety has to be organised by those who are directly affected by the implications of failure", (Haddon-Cave, 2009:493). This is based on the premise that those who face the jeopardy associated with an event are more likely to manage it more diligently than those who only benefit from the reward. 'There is research that indicates that betting money significantly improves a person's ability to assess odds, but even pretending to bet money improves calibration significantly' (Hubbard, 2009:4-5). In general, risk management systems do not require the tracking of reward and jeopardy as a management control. I feel that this is an

oversight. This should therefore be part of the process when using the proposed framework.

Only once the issues of reward and jeopardy have been identified and related to the various stakeholders can discussions of risk start to consider what exposure to risk might be acceptable to each party. These discussions would then look to determine how reward and jeopardy may manifest themselves, the equity of distribution (Renn, 2008a) and the potential for mobilisation (Renn, 2008a) that create the political imperative for those risks to be addressed (Clarke and Short, 1993). This now raises the question about how such discussions might be structured.

### Resulting Conceptual Construct

The final construct combines the factors discussed in the previous section with Figure 4; they build the framework to that found in Figure 6. The “Boundary” is placed around the issue under consideration This “embraces” that which is to be included and excluded from discussions. Next is the “Context”, delineated into “outer” and “inner”, which sets the perceptual construct that frames the discussion. The perceptual construct includes both the philosophy that is driving the organisation’s approach to risk management and any delineation by stakeholders of what they perceive to be reward and jeopardy.

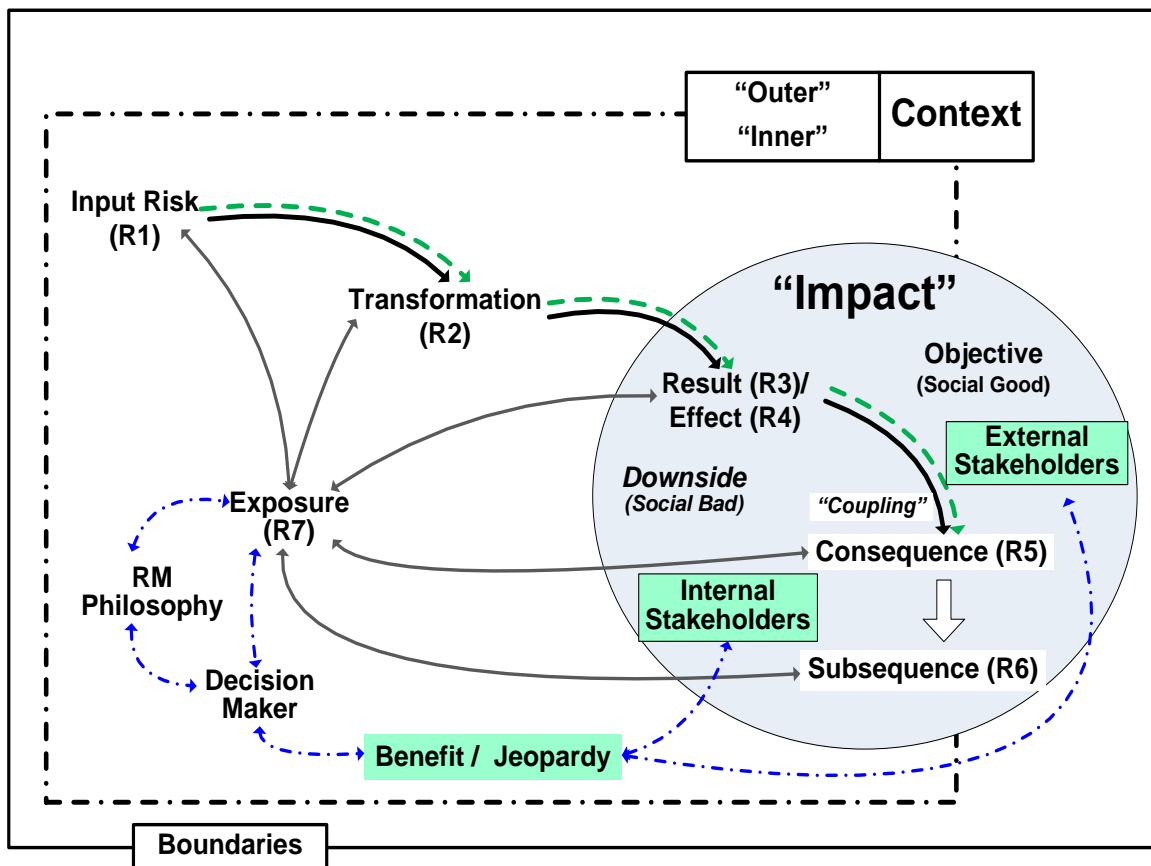


Figure 6 - Seven Dimensions of Risk - Full Framework

The depiction of stakeholders used within the framework has simplified Perrow's (1999) groups into internal and external stakeholders, and decision makers. Internal and external stakeholders have been placed within the impact circle as it is most likely that it is the impact that will concern them. The Decision Maker is placed outside the impact circle to point to the potential for their decision to cause the impact. However, the exact placing of the phenomena is not considered to be important because, once again, the phenomena are designed to provoke discussion rather than provide a prescriptive model.

At this stage, as the model has not been tested, it should be considered more as a visualisation of related phenomena rather than anything more definitive. Figure 6 shows that there is a temporal complexity (risk changes with time) deduced from the plethora of definitions used to define risk. The framework proposed is designed to enable general managers to explore the issue of risk in a more structured way and provide them with the basis on which to debate how the various risks might affect their endeavours in order to facilitate the necessary "Cross-Understanding" which 'depends on the extent and accuracy of each member's understanding of each other member's mental model' (Huber and Lewis, 2010:7). The purpose has been to provide a construct that is generalisable in that it offers a framework on which a common understanding of alternative mental models might be formulated.

The question remains as to whether the framework may be useful in most circumstances. To describe how it may be used, I will use two examples. The first looks at a management issue and the second addresses the post-modern conceptualisation of risk.

Aven (2010:93-95) argues that the term "risk" should not be limited to matters of jeopardy because, while an event may be a disaster in the short-term, in the longer term, it may be beneficial to the organisation. I would look to place this argument between R5 and R6. In the short-term, the events cascade to have detrimental consequences (R5). Then through management decisions, or some other positive action such as organisational learning, the organisation may turn the disaster to their advantage (Subsequence, R6).

The concerns of the post-modern writers on risk, cited earlier, are, in the main, about the power to allocate reward and jeopardy amongst stakeholders and the use of the concept of risk to exert social control (by either internalised or externalised mechanisms). Within the framework, I would see this discourse starting in the areas of decision makers, reward/jeopardy and stakeholders. For those discussing the Risk Society, I would see the discussions starting in the area of the stakeholders and consequences (both beneficial and detrimental).

## **CONCLUSIONS AND IMPLICATIONS**

The issue addressed by this paper is how general managers might think about the concept of risk. There are currently numerous ways to define risk, each seen as being suitable for their own context. However, the general manager is required to look across the various (academic) disciplines and to make sense

of each one within his or her own situation. The implicit assumption of many papers is that all alternative definitions of risk must be wrong. I refute this implicit position and offer an alternative view. This paper contributes a framework that enables all the current definitions of risk to be set in context with each other. I have looked for the synergy and coherence between what has been said and offer a different way of looking at this issue. If, however, we pick up on Woolgar's (1980) comments on the limitations of language; there is also a case for the development of a richer technical language for risk studies and practice. An illustration of some potential delineations is provided in Table 6.

<ul style="list-style-type: none"> <li>• Input risk – “irisk”</li> <li>• Transformation risk – “trisk” <ul style="list-style-type: none"> <li>– Risk (uncertainty) – “risku”</li> <li>– Risk (questionable assumption) – “qarisk”</li> <li>– Risk (volatility) – “vrisk”</li> </ul> </li> <li>• Result Risk – “rerisk” <ul style="list-style-type: none"> <li>– Risk (implication) – “riskim”</li> <li>– Risk (as failure) – “riskure”</li> <li>– Risk (as financial expected loss) – “riskfel”</li> <li>– Risk (of harm or death) – “riskdem”</li> </ul> </li> <li>• Effect Risk – “erisk”</li> <li>• Consequential Risk – “corisk”</li> <li>• Subsequential Risk – “surisk”</li> <li>• Exposure Risk – “riskex”</li> </ul>
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**Table 6 - A Delineation of Risk Terms**

The framework created (see Figure 6) gives risk seven dimensions. This construct is based on the premise that all activities potentially have associated reward and jeopardy. It therefore provides a way of relating the different definitions of risk and helps to show that they may not be as contradictory as might have been previously surmised. In management terms therefore, risk should not be seen as a separate “box” but as part of everything that happens. The framework also reminds users that any such discussions affect a variety of stakeholder and they are also affected by the context and boundaries within which they are being viewed. These too need to be brought to the surface.

While this framework has potential utility for both academics and practitioners, the key limitation of this paper is that it has yet to be tested in practice. Further work is required to provide empirical validation of the framework's utility.



# CHAPTER 3 - LINES, CIRCLES AND DOTS: MULTIPLE RISK PARADIGMS

## Abstract

This paper shows that there is more than one risk paradigm being used within the related literature. The paper examines how risk might be conceptualised during risk discourse. The proposed framework is designed to enable general managers to explore the issue of risk in a more structured way with a particular emphasis on their ability to generalise between different circumstances. The framework provides a basis for risk discourse and to facilitate shared understanding through awareness of “Cross-Understanding” and by avoiding any potential incommensurability. Formulated on the general construction of project, process and scenarios based risk management, I have identified paradigms that have been labelled Line, Circle and Dot. Each has been characterised. By combining these with Renn’s (2008a) three risk management approaches, nine potential paradigms emerge. As the paper acknowledges, even these nine are a simplification of the number of potential options. The paper concludes that any assumption that all discussions of risk are set in the same paradigm needs to be approached with great caution. A number of potential implications for the way we think about risk and the conduct of risk management have been identified. The implication for academic and other writers is that they should, in the future, be more aware of and articulate the basic assumptions behind their work and be more specific about the potential boundaries of their work’s generalisability. The implication for practitioners is that they need to be more aware of the limitation of any piece of research and the context within which it may, or may not, be applied.

## INTRODUCTION

The construct labelled “risk” has received consideration across a wide range of academic literature. The label is used to cover unwanted, unintended or unanticipated inputs, occurrences or consequences that have potentially negative connotations. Risk is often taken to be the jeopardy that is juxtaposed to the benefits associated with an activity. As well as examining the general area of risk management, this review looked at the subject of risk as contained within literature covering: (1) accident investigation, (2) crisis management, (3) business continuity management, (4) operational risk management, (5) process risk management, (6) project and programme risk management, (7) resilience and (8) high reliability, in order to identify whether the same paradigm has been used consistently within them all.

So let me start by explaining what I mean by a paradigm. Basing their work on Kuhn (1970), Field and Hole (2003:27) say ‘A paradigm is really just a framework within which scientists work’. They add that “Whatever you mean by a paradigm, the word implies agreement between scientists on ... (1) the

problems ... (2) the method ... and (3) theoretical frameworks". Saunders et al (2007:205) define paradigm as 'A way of examining social phenomena from which particular understanding of these phenomena can be gained and explanations attempted'. The idea of paradigm is closely linked to the idea of "world view" or "a way of seeing". However, as Van de Ven and Poole (1995:510), remind us 'A way of seeing is a way of not seeing'; i.e. an individual's world view affects both what they see and what they do not see. It therefore follows that understanding the world view and paradigm from which a researcher sees their subject has a significant effect on the results and recommendations produced. In the case of risk studies, it is important to identify whether all previous research on risk has adopted a single paradigm or whether a number of different paradigms have been used.

So as paradigms are so fundamental to the way we conceptualise an issue, I have two concerns:

The first is that discussions of risk issues may not be fruitful as parties to a discussion may be talking at cross purposes.

Second, proposed methods of risk mitigation may be unsuccessful as the parties may unwittingly be trying to use a solution from one context that is not generalisable to the new context.

Placed within the scholarship of application, this work is set within the context of (adapting Wildavsky, 1988) "thinking about how to think about" risk. The purpose of this paper is to examine whether there are multiple paradigms being used within the academic literature covering the subject of risk rather than a single paradigm in universal use. The claim is that three risk paradigms have been identified by this paper. While there may be others, this paper looks to warrant only the claim that refutes the implicit propositions of the current literature, i.e. that there is a single unified paradigm that covers the subject of risk. This proposition is seen to be implicit within the current work because there has been no previous discussion of the potential for there being more than one paradigm in use. The significance of this claim is that it suggests that all assumptions and claims made need to be seen within a particular clearly defined paradigm; this also has implications for the data that are required and available to decision makers and the generalisability of the recommendations from one paradigm to another.

In this paper, I first position the research in order to provide context. Secondly, I describe the methodology by which I identified the three paradigms using five key characteristics. In the third section I describe each of these paradigms and provide evidence of where they have been used. Finally, I discuss the implications of there being more than one paradigm in use.

## **POSITIONING THE RESEARCH**

This research is positioned within the scholarship of application; i.e. it looks to answer the question "How can knowledge be responsibly applied to



consequential problems?” (Boyer, 1990:21). Boyer goes on (1990:23) to assert that ‘New intellectual understanding can arise out of the very act of application ...theory and practice vitally interact, and one renews the other’. Therefore, in positioning this research, I first need to explain that it is set within a performance management context, secondly I look at the role of “world view” and its link to “seat of understanding”, and thirdly explain my purpose of enabling cross-understanding within risk discourse.

Firstly, writing from a performance management perspective, I take the position that all activities provide potential benefits and jeopardy and that management decisions are about maximising the former and minimising the latter. I am not, therefore, in disagreement with those, such as Chapman and Ward (1997:9), who argue that risk has an upside and a downside. However, where I deviate is that those who hold the view, as articulated by Chapman and Ward, see the “Upside and Downside” as being part of risk management. I, however, see the upsides and downsides as being two sides of the same coin (Hollnagel, 2009:18). I therefore relate the “upside” to the concept of business benefits<sup>1</sup> and see it as part of performance management. I use the term “risk management” as looking at the associated downside (jeopardy/risks).

Secondly, in examining the subject, I also accept that an individual is only able to understand the phenomena according to the mental models created by their education, experience and world view. Vaughan (1996:261) refers to this as a person’s “seat of understanding”. I see the process of management discourse (as described and utilised by Renn, 2008a in his work on Risk Governance) as enabling the parties to any discussion to develop enough shared understanding so that they are able to treat the phenomena of concern as a concrete enough entity in order to take action. For this to occur, parties to the discourse need to be able to confirm that they are using the same language to mean the same things. Therefore, when involved in risk discourse, the parties also need to be aware of where those involved in the discussion may be employing fundamentally different paradigms.

The multiplicity of ways that risk has been defined complicates any possible shared understanding as to the causes, mechanisms or consequences of risk. Shared understanding is considered to be essential for effective communications and to avoid the potential to talk at cross purposes. In order to develop the necessary shared view, Huber and Lewis (2010) advocate “Cross-Understanding”. They state that cross-understanding ‘depends on the extent and accuracy of each member’s understanding of each other member’s mental model’ (2010:7). Cross-understanding needs to be contrasted with “common understanding”. Sutcliffe (2005:421) warns that an issue with “common understanding” is that ‘groups sometimes focus only on those perceptions that are held in common’ and thereby limit the discussion to areas with which they are all comfortable. Central to any debate is the issue of where

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<sup>1</sup> Benefits management tends to define business benefits as being 1) make money, 2) save money, 3) comply with the law and 4) achieve the business’ strategic goal.

different authors use different paradigms and therefore they fail to communicate accurately. This might explain why seemingly sound recommendations fail when applied in different circumstances. Therefore, if in the subject area of risk there was more than one paradigm in use, there would be implications for both academics and practitioners. For academics these would involve the boundaries that define their work. For practitioners these would involve the application of risk theories to their circumstances.

Renn (2008a:159-172) presents the first challenge to cross-understanding within debates about risk. He suggests that there are three management approaches to risk: precautionary-based risk management, risk-based risk management and discourse-based risk management. Each of these can be seen in themselves to provide different paradigms as each invokes different models, theories methodologies and world view. Renn's work therefore provides an initial warning that discussions of risk may be complicated by those involved unwittingly in adopting contrary paradigms. This therefore raises the question as to whether there may also be other unrecognised paradigms at play during discussions of risk.

The aim of this work is to develop 'an overarching conceptual framework ... to explain how seemingly disparate or unrelated theories fit together to form a coherent whole' (Editor AMR, 2011:10). I recognise that such frameworks have limitations. Henri Theil stated that 'Models are to be used, not believed' and from George Box 'All models are wrong: some models are useful' (cited in Hubbard, 2009:213), Weick sets my ambition for this risk framework; that it is to 'let people get their bearings when they observe complex organisations that face the unexpected' (Weick, 2004:27). He goes on: 'one way we get our bearings in this investigation is to assign the incident to a cell ... in a way, it really does not matter where we assign it, because the act of assigning itself gets us talking, digging, comparing, refining, and focusing on the right question' The framework that I propose is designed to enable academics and general managers to explore the issue of risk paradigms in a more structured way and provide them with the basis on which to debate how the various aspects might affect their endeavours.

It should also follow that, to be consistent with the concept of cross-understanding, this paper needs to be written in the first person in order to reflect that it articulates the understanding of the author and is an opening statement in a debate about whether there is a single paradigm or multiple paradigms being used within discussions of risk. The ensuing debate should hopefully establish what the paradigms are, their implications and lead to their adoption as a key part of the risk debate. It is accepted, therefore, that this debate will be enhanced and enriched by the contribution of others.

Therefore, in summary, the purpose is to establish a framework to enable a preliminary analysis of the paradigms in use during discussions about risk. The validity of this research should be judged by whether it provides enough evidence to establish that more than one paradigm is currently in use and that

the framework provided enables others to develop a clear understanding of their own position.

## **METHODOLOGY**

By placing this work within the scholarship of application, the method is based on taking existing knowledge and trying to apply it. An interactive process is then generated by which we first look at existing knowledge, try to apply it, see what we might learn from that knowledge and then reflect on what we might learn about that knowledge. In the case of the literature reviewed, one of the first questions asked was about each phenomenon's generalisability, i.e. whether 'findings may be equally applicable to other research settings' (Saunders et al., 2007:151). For this to be established, the setting of each had to be determined and the paradigm in use identified.

Specifically, the phenomena discussed in this paper emerged from the inductive research of risk governance. Literature from a wide range of disciplines associated with risk was reviewed. The disciplines reviewed were project management, operational risk management, accident investigation and prevention, crisis management, resilience engineering, High Reliability Organisations, and their relationship with Normal Accident Theory. This literature was selected because it all alluded to potential management failure.

As articles were reviewed, their characteristics (including assumptions and contexts) were collated, contrasted and then evaluated for consistency in the dimensions used. This was to ensure that the various authors were comparing like with like.

As the results of an iterative process of deliberations, five key characteristics were identified. Each characteristic was binary in nature. Grouping the characteristics produced three potential risk paradigms. Next I will present the key characteristics before synthesising these into three paradigms.

## **KEY CHARACTERISTICS**

From this analysis, a number of characteristics emerged as the analytical criteria.

The first characteristic was whether the user was looking forward to an occurrence in order to mitigate any unwanted event, or whether they were looking backwards from an occurrence to determine why an unwanted event had occurred.

A second characteristic was whether the end result is the desired end goal or whether it was an undesirable outcome to be avoided.

The third characteristic was whether those managing the situation chose the outcome (such as a successful project outcome) or whether it would be imposed (such as an accident).

The fourth characteristic involved the degree of invariance in the way the occurrence manifested itself; i.e. whether there were multiple routes or a single route to the occurrence.

The final characteristic focused on whether the process was managing a unique or a recurring event. (During the analysis two groups emerged: (1) unique events which had enough similarities for them to be usefully grouped for analytical purposes and (2) an outcome constructed through a unique combination of repeated modular activity.) For the purpose of this paper, I shall however, for the sake of clarity, use only the two extreme positions of unique and recurring.

The results of these iterative deliberations are described below and examples of each are used to warrant the claim of there being more than one paradigm in use.

## **RISK PARADIGMS**

In this section I first describe the paradigms identified. Secondly, I provide the evidence of their use. Third is a description of how the paradigms have been mixed and finally I produce a framework which combines Renn's (2008a) three approaches to risk management and my three basic paradigms giving nine potential combinations in which debates about risk may take place.

### **Description of Paradigms**

The writings on risk can be grouped into one of at least three main areas. These are temporally linear processes (characterised by Project Risk Management), cyclic production (processes characterised by manufacturing), and finally, a scenario based process (characterised by events such as natural disasters or discussion of accidents). While it may be tempting to label these as "project", "process", and "scenario", these terms already have, as I will show, multiple meanings and therefore there is potential for such labelling to add confusion rather than clarity to this issue. For clarity, I have labelled these as "Line", "Circle", and "Dot" respectively. I shall describe the characteristics of each.

Line encompasses temporally linear processes characterised by Project Risk Management and strategic planning. The key characteristics that identify Lines are that they are (1) looking forward to a future event, (2) the final outcome is desired as being positive, (3) the stakeholders choose the desired outcome, (4) there may be choices of pathways between the present and the outcome, these processes have less invariance as stakeholders may be free to choose one of several routes to the same end, and (5) while parts of the project may involve modular repetitions, the combination is likely to be unique.

Circle encompasses cyclic processes characterised by manufacturing production and business processes. The key characteristics that identify Circles are that they are (1) looking forward to a future event, (2) the final

outcome is desired as being positive, (3) the stakeholders choose the desired outcome, (4) the process, however, may define a single fixed pathway, the process, therefore demands greater invariance, and (5) the essence of the process is its repetitive nature which enables continual monitoring and refinement.

Finally, Dots are scenario based processes characterised by (1) looking backwards from a specific future event in order to prevent it or understand why it occurred, (2) the final outcome is unwanted as it is seen as being negative, (3) the stakeholders do not choose whether it occurs, (4) there may be choices of pathway between the event and the present, pathways may be numerous and so might be seen as having less invariance, and (5) while the event may be able to be cast under a generic title (such as “crash”, “fire”, or “flood”) it is unique in time, place and consequences.

A summary of these characteristics is set out, for comparison, in Table 7.

**Table 7 - Summary of Characteristics**

	<b>Forward or Backward Looking</b>	<b>Desired or Unwanted Outcome</b>	<b>Chosen or Imposed Outcome</b>	<b>Variance or Invariance of Process</b>	<b>Unique or Recurring</b>
<b>Line</b>	Forward	Desired	Chosen	Variance	Unique
<b>Circle</b>	Forward	Desired	Chosen	Invariance	Recurring
<b>Dot</b>	Backward	Unwanted	Imposed	Variance	Unique

### **Evidence of Use**

Having identified three potential risk paradigms, now I will describe how each is used. I will again examine them in the order of Line, Circle and Dot.

#### **Line**

In general, writing that uses Line processes is more easily identified and often has phrases such as “Project Risk Management” in its title. The British Library catalogue (as at 28 Sep 10) has, for example, 35 books that include this phrase in their titles. A ProQuest search (also done on 28 Sep 10), using the same search string, identified 247 documents with these words in the title. As well as project management, Line leads directly to programme risk management. The Line paradigm is, however, not necessarily restricted to project or programme management. Strategic and other literature on planning might also, more obviously, be seen to fit this paradigm. Less obviously, I might include Perrow (1999) within this category; unlike many writers on accidents, he does not start his description with the accident. He uses a temporally based narrative to show how each step on the pathway to the

accident was a logical next step when seen from the eyes of those involved; he shows how those involved unwittingly chose their own path to destruction.

## **Circle**

Circle is the process within (relatively) static organisational structures conducting (relatively) invariant repetitive actions with outputs but no final outcome; as the process becomes more mature (and efficient) it may become more closely coupled. This provides maximum opportunity to learn from experience after each process cycle. Potential unwanted outcomes can be identified, the process adjusted and the unwanted reassessed. The most obvious literature in this area covers business processes whether they are production, administrative or managerial.

More easily missed is the literature on Operational Risk Management and Enterprise Risk Management. King (2001:5-6) states that 'operational risk 'is not related to the way a firm finances its business, but rather to the way a firm operates its business...The essential ingredients here are the process definition ... performance measures ..., the risk factors ..., and the control systems'. Hoffman (2002) describes ways of managing operational risk based on the Basel definition, which focuses on 'inadequate or failed internal processes'; again there is no mention of projects, and "scenarios" are just numbers (data sets) to be modelled and mapped.

In his book on Enterprise Risk Management subtitled "Tools and Techniques", Chapman (2006) also places emphasis on ensuring that the process works correctly. While Chapman does make reference to project, this again is done in the context of the associated processes. In his book on Enterprise Risk Management, Monahan (2008) places heavy emphasis on "Cause & Effect" diagrams, causal-loop diagrams and process flow charts; this might all be characterised by Circle. He includes "What-if?" (scenarios) where 'we are considering what might happen along the path to an outcome'. This may suggest "Line" as it looks forward but, in fact, just covers deviations in process due to changes in inputs. Some other authors who adopt the Circle paradigm are: (1) Damodaran (2008) looks at Strategic Risk Taking; his work is based on quantitative methods and uses statistical scenarios (data sets): (2) Hubbard (2009), again uses quantitative methods (such as Bayesian theory) which requires repetition. This implies a repetitive process in order to generate the necessary data. Dickstein and Flast (2009) focus on the business process in their approach to managing risk. They looked at the processes in (repetitive) business and emphasise the use of quality control as a way of delivering what was wanted rather than getting the unwanted.

Other areas that may be characterised by Circle are the Literature on resilience (such as Hollnagel et al., 2006) and High Reliability (such as Roberts, 1993). They both emphasise the repetitive nature of the task in hand, where learning by "trial & error" is possible (if not always desirable) and issues of invariance are critical.

Again there is cross-over within disciplines. As I will show, accident based literature mainly comes within the Dot paradigm. However, Toft and Reynolds, (2005) see learning based on repetitive action either within an organisation or from similar organisations; they cite the System Failure & Cultural Readjustment Model and Turner Models (2005:30-33). With this, they adopt a Circle paradigm; this raises the concern about how the two paradigms (Circle and Dot) interact.

## **Dot**

For examples of Dot thinking I would look to Crisis Management literature, as an offshoot of Business Continuity management, and Accident Investigation literature. And finally, I shall also look at scenarios that are Circles.

The general difference between the Crisis Literature and Accident Literature is that Crisis Literature is seeking to identify a future unwanted event (a scenario) in order to see how it may be avoided or how the organisation may recover from it. Examples of such work are Fink (2000), Lagadec (1993), and Smith and Elliot (2006).

From what I would characterise as accident literature, I would first cite Reason (1990). I would argue that as Reason starts with an incident and works backwards, his approach is generally scenario based. As with others who specialise in accident investigation, Reason's job is made easier because, rather than having "40,000 options" to consider, he is only tracing events back to "one true cause". (Reason (1997:93) provides the example of a bolt with eight nuts labelled "A" to "H"; Reason points out that there is one way to assemble them correctly and over 40,000 ways (factor 8) to get it wrong.) This task is, however, still not a simple one. Leveson (2004:242) points out that in the investigation into the loss of an American Airlines B-757 near Cali, Colombia in 1995, there were seven potential pathways between two key events within the investigated scenario. By their very nature, most writers looking to learn lessons from accidents often come at the subject on a scenario basis. There are also writers who identify an unwanted scenario with the aim of prevention. Two examples are Sagan (1993), who took as his precept the scenario of accidental nuclear war, and Renn (2008a), who took scenarios surrounding environmental risk as his precept. In these cases the requirement is to identify all the potential paths to the unwanted event and to mitigate each one as it is deemed necessary, plausible or cost effective.

Besides being used as a description of an unwanted outcome (such as a crash, fire or another accident), the term "scenario" has at least two other uses. King (2001:246) points to the use of the term as a data set for use with a predictive or analytic model. Monahan (2008:63) uses the term "scenario" as another way of describing "What-if" analysis; his use is consistent with King in that what he is talking about are variable inputs. This use of the term "scenario" by both King and Monahan can be seen to be part of the risk management process and therefore might come into the Circle paradigm. There is, however, a second use of "What-if" analysis and that is where the

variable is an output or outcome. In this case, this is consistent with the scenario concept used within the Dot paradigm.

## Summary

In summary, Table 6 provides a diagrammatic representation of the construct. The diagram provides a simplified picture of the non-linear relationships, the purpose of which is to emphasise the complexities involved; for example, as explained above, the term “scenario” has different meanings within different contexts. It is accepted that this diagram represents a single perception of the construct, which others may see differently; however, that is not important. As stated in the aim, this paper is not claiming the discovery of an absolute truth. Nor is the suggestion that writers in any one area should be, or are, restricted to a particular paradigm. What is important is the fact that these different paradigms exist; even the constructs, as described, are not important, it is that they may potentially exist that is. It is that this may result in poor risk communication and may result in talking at cross purposes due to the use of different paradigms..

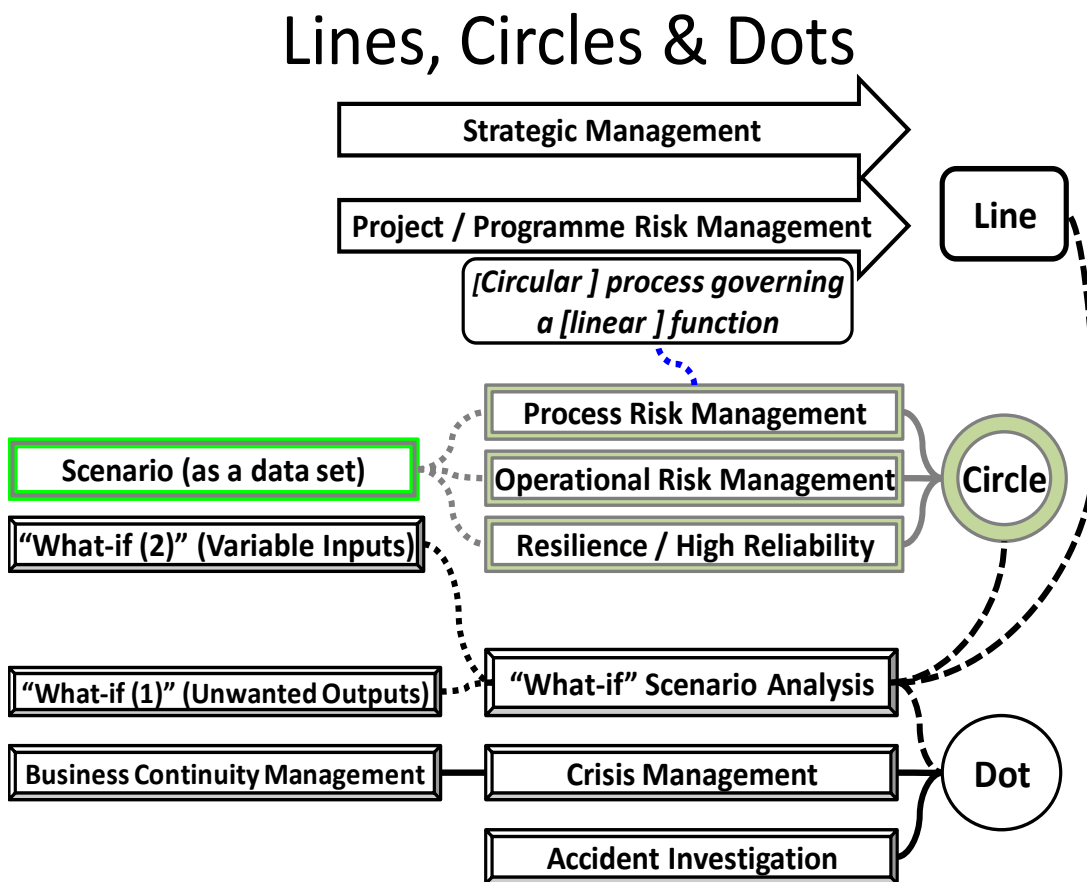


Figure 7 - Diagrammatic Representation



As stated previously, the purpose is 'to (attempt to) explain how seemingly disparate or unrelated theories fit together to form a coherent whole' (Editor AMR, 2011:10) and to enable, through debate, the discovery of any "incommensurabilities" within a debate. "Incommensurabilities" is described by Narayanan and Fahey (2004:51-55) as the compatibility of language between subject areas, where the same terms 'may have distinctly different meanings'. An example is the term "scenario"; the term may refer to a data set, a variable input or an unwanted output depending on its context. Parties to such discussion should recognise the need for cross-understanding and then work to achieve it

## **Overlapping of Paradigms**

It is acknowledged that there are likely to be overlaps between Lines, Circles and Dots within any particular system. This is caused by both the unit and level of analysis employed. Taking the example, used by authors of work in High Reliability Organisations, of naval aircraft carrier operations, it can be seen how the construct may change between Lines, Circles and Dots. If as a first example we take, as a unit of analysis, a specific carrier mission, the phenomena may be seen in context as a line: the carrier gets its mission, prepares, deploys, operates, returns and recovers. The sequence is seen as unique for this particular deployment and has a temporal linear context. If the example used flight deck operations as its unit of analysis, then this might be envisaged as a Circle. Here we would see planes being prepared, launched, conducting their mission recovered, maintained and then readied for the next cycle. An alternative unit of analysis may be a pilot's mission: this might again be seen as a line. This would involve a unique briefing, aircraft preparation, aircraft launch, conduct of mission, recovery and debrief. Each would be unique for this particular mission, again based on a temporal sequence. If, however, the discussion looks at accident prevention, then the paradigms may be Dot. An example may be prevention of accidents during the arming of aircraft. This examination would work back from the arming process and identify all the potential causes of an accident. Even when looking at the same phenomenon, take for example aircraft operation, the unit of analysis can have a significant effect. If the unit of analysis is the mission planning cycle, while unique inputs may be considered, the focus would be on those aspects of the aircraft mission that are repeated; the paradigm would be Circle. If the unit of analysis was on a specific mission then, while some repetitive sub-routines may be included, the focus would be on those aspects which were "one-offs" and therefore unique to that mission; the paradigm would therefore be Line. It is therefore possible to see how the selection of the unit of analysis may alter the paradigms used between Line, Circle and Dot. Morgan (1997:281) points out that all conversations are partial and selective in the evidence employed and the use to which it is put. This selection can be seen also to determine the paradigm used to examine the subject in question.

If we look at granularity, we also see the same patterns emerge. Taking as an example a unit of analysis as being a pilot's mission, we see that this mission can be broken down into discrete components. In the example given above its

components were briefing, aircraft preparation, aircraft launch, conduct of mission, recovery and debrief. Therefore within an analysis of the pilot's mission, we may take it down a level of granularity to aircraft launch. Here the linear paradigms may be seen as part of a circular paradigm involving the launch teams of the flight deck. In this case the pilot and his mission are an input to the cycle process involved in launching aircraft. As part of the pilot's unique mission, he may also have been warned against causing civilian casualties while conducting his mission. This particular aspect of his mission therefore may have assumed the paradigms of Dot, where the scenario was discussed, analysed and it was determined how such an eventuality might be avoided.

From a risk management perspective, this changing of paradigms may also be seen as a change between risk managing the outcome and risk managing the process by which the outcome is achieved. Potential exists for there to be jeopardy associated with both and therefore there is a need to risk manage the process by which the risk issue is being managed. This might lead potentially to confuse the process by which risk is being managed and the characteristics of the risk issue itself.

Evidence of changing paradigms in use can be found in the literature. Looking at the Shuttle programme at the political level, (Vaughan, 1996), the process can be characterised as a Circle, a repetition of launch and recovery. Vaughan (1996) looked at the project/ programme level where a project management process underlines the NASA management system; at this level it can be seen as a Line. Vaughan (1996) also provides testimony that some of those involved argue that each launch is a unique event. However, in some parts where the unit of analysis changes to the solid booster rockets, the paradigm can be seen as a circular production process where the boosters are made, filled, used, recovered, refilled and reused giving a clear opportunity to learn from previous experience. Snook (2000) uses all three paradigms: the Dot was the shooting down of the helicopters, the Line was the mission planning process and the Circle was the repetitive routines he identified. Snook's perspective (his lens) was accident prevention, where the "shoot down" was the scenario that he was examining. If his lens had been risk management, the Line, Circle and Dot may have revealed an alternative understanding of the issues. However, by not appreciating the different Risk Management issues surrounding Lines, Circles and Dots, some key assumptions may be overlooked and learning points could be missed. This opportunity for new learning can also be seen when examining Perrow's (1999) work from a Risk Management perspective. Unlike other writings on accident prevention, Perrow characterises each step as a logical small routine decision that leads to an unwanted outcome. I would suggest that each process type (Circle, Line or Dot) has a distinct character and provides distinct data for risk analysis and response options. The potential for misunderstanding and misinterpretation is increased if different parties to a discussion adopt different mental mindsets.

## Paradigm Framework

As stated in the introduction, Renn opened the debate on multiple paradigms when he proposed a triad of Risk Management approaches (Precaution-based, Risk-based and Discourse Based). When Renn’s ideas are now combined with Line, Circle and Dot, nine potential combinations emerge. These are shown in Table 8. It is accepted that even this is a simplification. For example, while in general use the term “precautionary” is associated with the idea “first do no harm,” Renn (2008a) provides us with a range of meanings. Aven (2010:215-225) takes this argument a step further. After describing the historical development of the precautionary principle, he proposes that the cautionary principle be applied in the case of risk and uncertainty, and that the precautionary principle is applied in the case of scientific uncertainties. This demonstrates how the debate is still active and therefore, while the table provides nine options, these should be viewed only as the starting point for any discussion.

**Table 8 - Discourse Paradigms**

	<b>Line (Project)</b> <i>Linear</i>	<b>Circle (Process)</b> <i>Repetition</i>	<b>Dot (Scenario)</b> <i>One-off</i>
<b>Precaution-Based</b>	PB-Line	PB-Circle	PB-Dot
<b>Risk-Based</b>	RB-Line	RB-Circle	RB-Dot
<b>Discursive-Based</b>	DB-Line	DB-Circle	DB-Dot

However, if a shared understanding is to be developed and incommensurabilities are to be avoided, parties to any discussion about risk would be advised to take time to establish the paradigms within which they are working. They need to ask, is their approach Precautionary-based, Risk-Based or Discourse-based risk management? In addition, does the problem involve Lines, Circles or Dots? For, as Weick (2004:27) says, ‘it really does not matter where we assign it, because the act of assigning itself gets us talking, digging, comparing, refining, and focusing on the right question’. An assumption that risk is discussed in the same way, based on the same assumption and world views, is likely to jeopardise the success of any process designed to manage it.

## IMPLICATIONS

The implications of there being at least nine different paradigms, as identified in this paper, can be grouped under two headings. The first is how we might think about risk and the second involves how we might act.

### Thinking about Risk

Multiple paradigms have three implications for the way we think about risk. Specifically these involve 1) the academic segregation of disciplines, 2) generalisability of risk lessons, and 3) our ability to assess.

There are a number of strong academic disciplinary groupings covering the literature under discussion. As has been seen, this includes risk management, crisis management, resilience, high reliability and accident investigations, to name but a few. However, for a generalist practitioner (such as members of a corporate board), the differentiations can be confusing. Where does one stop and the next start; or what are the overlaps? Much of the material, cases and authors cross disciplines; the way ideas are used, however, is different. These fields are a healthy maelstrom of competing and complementary ideas. The current segregations may be useful for reductionist research purposes (important as it is to understand the details of the mechanism involved), however, they do not help the synthesis of ideas required by practitioners if they are to be able to develop a full understanding of the competing claims. To this end, Line, Circle and Dot provides a simpler framework for practitioners against which to place the more detailed parts of the picture provided by academia.

Writers working in one context seem to make little acknowledgement of the others and therefore there is little discussion as to whether findings set in one paradigm are generalisable to the others. Acknowledging the paradigms used may alert academics and practitioners to examine whether ideas developed under one paradigm may be generalisable to the others and to review how this may affect our developing understanding. Further research is required to understand the particular issues pertaining to the generalisability of recommendations between a Line, Circle or Dot.

Our ability to assess risks may also be affected by whether they are Line, Circle or Dot. For Line, while parts of a project may be repetitions, the combinations are likely to be unique. Risk assessment data may therefore need to be based on comparisons, benchmarking and subjective comparison, whether this is analysed using qualitative or quantitative tools. Lines, by their very nature, will entail the “liability of newness” (Vaughan, 1996:140). Circle provides the maximum opportunity to learn from the experience of each process cycle, where inputs are refined and adjusted as appropriate. Here, risk assessment may focus on deviation from norms and focus on the inherent problems that this may bring. Finally, Dots, by their nature, are the result of speculation and imagination. This brings with it questions as to which scenarios are worth investigation and, “as it probably will not happen”, whether

it is worth the short-term investment needed to understand a long(er)-term risk. The problem for those trying to risk manage these issues is that there are so many potential pathways by which the unwanted end may transpire. Due to the many pathways needing to be countered, relevant data is likely to be harder to identify. Mitigating the probability is therefore problematic (for has the key pathway been identified?) and so mitigating the impact may become the priority. Even if these obstacles are surmounted then, due to the many potential pathways that may need to be countered, the poor availability of data and conflicting priorities, may make full risk assessments impossible to achieve.

By their very nature, Lines, Circles and Dots each present different challenges for those tasked with conducting risk assessment. However, by identifying which paradigm is in play, then those conducting the assessment are more easily able to focus on and resolve their particular issues. Further research is required to understand the particular issues pertaining to the risk assessment of a Line, Circle or Dot.

## **Response Options**

As with other issues created by differing paradigms, there are questions as to whether they start to define the available response options as well. Here I consider two issues. The first is whether each of these is amenable to skill-based, rule-based and knowledge-based intervention as described by Reason (1997). The second is whether understanding of a problem is tantamount to resolving it. Again, I look at Line, Circle and Dot, each in turn but only in the most general terms.

Line has been previously described as a mix of routine-ised processes and new combinations of actions. These might be seen to lend themselves to a mix of rule-based and experiential (knowledge-based) judgements. The management of these issues therefore requires the use of a balanced mix of rule-based and experiential (knowledge-based) judgement in order to handle the repetitive and the novel aspects respectively. Due to their instinctive character, skills-based interventions are less likely to be so important.

For Circle, the key characteristic of a repetitive process is the requirement for stability of the systems. This stability enables rules to be created, tested and optimised. By such testing, unwanted outcomes can be identified, the process adjusted and the unwanted reassessed. Under such conditions rule-based actions can be generated, the staff trained in the specifics and monitored. In such circumstances, organisations may appear not to be compelled to rely on the tacit knowledge and skills of their staff.

When any scenarios envisaged under Dot occur, the responses may be characterised as an accident, disaster or crisis. A key feature of these circumstances is the attendant stress, compressed timescales and incomprehensible interactions. In such circumstances, rules-based options have only a limited utility, which depends on how accurately the scenario had

been predicted. As the sequence is not established, a rules-based solution is less likely to be appropriate. Knowledge-based judgement therefore becomes key. However, in order to make best use of their knowledge, those involved also need to have the skills to operate under such stress. In his comparison of crises at Three Mile Island and Apollo 13, Stein (2004:1254) addressed the role of anxiety but he did not posit the possibility that the previous experience of those on the Apollo 13 team had given them the skills needed to operate effectively under such conditions, whereas this was not the case with those involved at Three Mile Island. While this variable is rarely considered, it is a key component of the training within the emergency services.

This would seem to indicate that Line, Circle and Dot do require a different balance between the most appropriate mix: skills-based, knowledge-based and rule-based options, that needs to be investigated. Further research is required to examine this issue in more detail.

A second issue emerges from this work. This is the differing perspective in the gap between understanding and resolution. In their discussion of organisational learning, Ramanujam and Goodman (2011:85) state that 'As an outcome, learning represents the acquisition of new repertoires, representing a change in a group's potential behaviors.' Yet Carroll and Fahlbruch (2011:3) acknowledge in the same volume that 'The gap between analysis and implementation is considerable and poorly understood'. The impression given by many Dot based writers is that, in Pareto's construct, finding the cause of an accident, for example, means that an organisation is 80% of the way towards preventing the next one (writers often express the sentiment that if an organisation had understood the cause and potential for an accident, why did they not prevent it?) Hopkins (2009a:510) says 'NASA had already been told very clearly in the Stephenson report that it was dangerously close to the boundary. In my view the problem was that NASA's organisational structure prevented it from acting on this knowledge.' His assumption is that as they knew they were "close to the boundary", they knew where they needed to draw back and how to go about it; this assumption should be questioned. For other examples see Toft and Reynolds (2005). Line based writers appear to be at the opposite end of the spectrum. In their writings they see that understanding an issue is barely a start (20%) in trying to resolve it and hence the emphasis on project risk management. In Circle, as error or variance is seen as being ever present, this might be seen as placing them at 50/50. The issue here is therefore the potential tension between those who feel that once the cause is found the job of prevention is near complete and those at the other end of the spectrum who feel that the real work has just begun. Such issues are more easily managed if they are understood. Further research is required to examine this issue in more detail.

In summary, there are implications of there being more than a single paradigm in use for the academic segregation of disciplines, generalisability of risk lessons, our ability to assess risk and the way we are able to respond to risks. Further research is required to understand the particular issues pertaining to the variation in responses available under a Line, Circle or Dot.

## CONCLUSIONS

Risk Management is complicated and multi-faceted and the issues, from a general manager's perspective, are covered under a wide range of academic disciplines. Reason's (1997) simple and elegant demonstration of the many major things that can go wrong is neatly balanced by what Perrow (1999:398) calls his 'optimistic...Union Carbide factor'. To balance the seeming futility of attempting Risk Management, due to the sheer number of ways things can go wrong, Perrow says 'it takes just the right combination of circumstances to produce a catastrophe' (1999:356) or, more colourfully, 'accidents are commonplace, but disasters are hard to arrange' (1999:398). Therefore, in order to make it hard to arrange disaster, management needs to understand the nature of what they face and need to be able to discuss it in compatible terms. Risk is a multifaceted and complex subject. This paper has shown that the assumption that all authors on risk are using a single paradigm should be treated with great caution: the situation is much more complex.

When thinking about thinking about risk, combining this work with that of Renn (2008a) nine potential combinations are provided which present different paradigms within which to debate risk; see Table 8. This research has provided a framework as a catalyst to enable more effective communication of ideas and therefore may lead to a better cross-understanding, helping those engaged in the discussion of risk to benefit from being clear about whether they are working on the same basis.

The limitations of this research are recognised, which is why the claim is limited to suggesting that more than one paradigm has been used within the academic literature. Further research is required to establish whether the three paradigms identified here provide the complete set or whether there are others. Research is also required to refine each paradigm and to explore whether they also embrace fundamental different ontological or epistemological positions or whether they only differ in the way described in Table 7.

A number of potential implications for risk management have also been identified for the way people might think or how they act. These include the academic segregation of disciplines, generalisability of risk lessons between disciplines, our ability to assess risk under each paradigm and the way we are able to respond to those risks. All these areas require further research.

In summary, this paper therefore provides a different way of looking at and thinking about the fuller range of literature which discusses risk related issues that might be of concern to corporate management. This might forestall issues of blind spots where institutionalised paradigms create "seeing is a way of not seeing". An understanding and use of these different risk paradigms should enable more effective risk discourse and cross-understanding between the parties involved.





# CHAPTER 4 – EXAMINING THE PURPOSE OF RISK INDICATORS

## Abstract

The purpose of this chapter is to examine the idea of “risk indicators”, looking at the way they are currently used and asking whether the term warrants a significantly different formulation. The chapter is based on a synthesis of examples of how the term “risk indicator” is used within the academic literature. I have extracted from performance management literature those characteristics that have been seen to be key to the formulation of performance indicators. These were then compared to the findings of literature examining how people perceive and react to a negative proposition. I propose that a fundamental difference should be recognised between the construct of a performance indicator (for the monitoring and reporting of both benefits and jeopardy) and that of a risk indicator. I propose that risk indicators should be used to focus on “inconceivable” events that have the potential to produce significant damage or harm. The results of the research are limited to a theoretical construct. The practical implications of the research, however, suggest that, in order to forestall failures of foresight, managers need to remain open to the “inconceivable”. This paper is useful for both researchers and practitioners in that it gives a new perspective on the use of different categories of indicators as part of performance management systems.

## INTRODUCTION

Conventionally, performance management has focused on the delivery of benefits (Neely et al., 1997), while the management of potential jeopardy has been sidelined to risk management. This may be considered as a focus with an “optimism bias”. Vaughan (1999) argues that the “dark side” (risk/ jeopardy) is inextricably linked to the pursuit of organisational benefit, the “bright side”, unlike Calandro and Lane, (2006:38) who argue for separate scorecards.

This paper looks to introduce the concept of the performance management of risk, i.e. the integration of the dark side and the bright side within a universal performance management system. The context for this paper is the phenomenon labelled by Turner (1976b:378) as “failure of foresight”; the failure to foresee and prevent some unwanted occurrence such as an accident or other organisational crisis. Part of this debate is about ‘what will be seen as clear warnings after the facts were discounted before the fact’ (Woods, 2009:498). The key factor within failure of foresight is, however, that not only are the probability and consequence unknown but also, and more importantly, management is uncertain of how the crisis or accident which they need to prevent or mitigate may manifest itself. For this task, the indicators may be seen to be required to provide a forewarning of unpredicted manifestations of unwanted occurrences. From this evolves the question as to whether the basic paradigm in which the question is asked affects a person’s ability to recognise

or acknowledge potential problems and/or whether the question being set in a positive or negative way might affect one's abilities to see, or whether 'seeing is a way of not seeing' (Perrow, 2007:74).

Einstein is reputed to have said: "Insanity is doing the same thing over again and expecting different results". This idea can be seen within the work of High Reliability theorists who warn against "closed ways of seeing" and recommend being open minded and seeking fresh perspectives (Mindfulness: Weick and Sutcliffe, 2007). In her analysis of the Challenger disaster, Vaughan provides an example of how changing from a positive to a negative paradigm can have a significant effect on the outcome of a discussion. She describes (1996:249) the moment when the paradigm of discourse flipped; the paradigm changed from one where the question was "prove the Shuttle is safe to fly" to one of "prove the Shuttle is unsafe to fly". This can be seen as a change from proving a positive proposition, to proving a negative one. While the effect of this change (the accident) has been discussed at length, the significance of the flip on the course of the debate has received far less attention.

This paper will examine the change from a positive to a negative proposition and the implications for the formulation of performance management metrics. The paper will be framed by the context of benefits v. jeopardy or, to put it another way, reward and risk. This paper claims that a more appropriate use of the term "risk indicator" would be as a device to scan for emerging threats which, while considered to be highly improbable, have the potential to cause significant ("catastrophic") harm to the wider community, external to organisational boundaries. The significance of this is that it suggests a radical change from current practice.

This is a conceptual paper which forms part of a wider body of work developing the strands of 'thinking about how to think about' risk (Wildavsky, 1988:2). The central focus of this work is the performance management of risk. The work is seen to be most relevant to the construction of mental models/schema (Rumelhart, 1981) which takes place in the early stages of risk discourse (Renn, 2008a:159-172). Here we are looking to facilitate "Cross-Understanding" between stakeholders rather than a "common understanding". Huber and Lewis (2010:7) state that cross-understanding 'depends on the extent and accuracy of each member's understanding of each other member's mental model'. Here the important issues are to understand how others see these issues at hand in order to reach the point where the cross-understanding is clear enough to enable the group to take action. A danger of seeking "common understanding" is highlighted by Sutcliffe (2005:421) where she says that 'groups sometimes focus only on those perceptions that are held in common' and thereby limit the discussion to areas with which they are all comfortable. However, as Sutcliffe (2005:421) goes on to say, 'it is the divergence in information and perceptions, not the commonalities, that hold the key to detecting anomalies' and this explains my preference for a cross-understanding approach. As with the overarching body of work, the research on which this report is based looks at the issue of risk management at the corporate board level and is focused on enabling individuals, at that level, to

develop the cross-understanding necessary before they start to formulate their risk management strategies as part of risk governance.

Specifically, in this paper I examine the concept of risk indicators and their use in the performance management of risk. After outlining the methodology used, I examine how the term has been used within the academic literature and then contrast this with the formulation of a performance indicator. Next I examine how positive (reward) and negative (risk) propositions manifestly affect an individual's perception in different ways. Finally I propose a new formulation for risk indicators that contrasts them with performance indicators and look at the implications of, and uses for, the new proposed format.

## **METHODOLOGY**

In order to identify the widest possible use of the term "risk indicator", literature from a range of risk management disciplines was reviewed. As well as general risk management, this review looked at: (1) accident investigation, (2) crisis management, (3) business continuity management, (4) operational risk management, (5) process risk management, (6) project and programme risk management, (7) resilience engineering and (8) high reliability. While some authors, such as Smith and Elliot (2006:7-9), see 'risk management being part of crisis management', I take the opposite position. For the sake of the overarching package of work, I use the term "risk management" to encompass all the disciplines (including those listed above), which look to guide management to forestall or recover from that which places stakeholders in jeopardy. In this paper, potential jeopardy and associated reward are seen as being 'two sides of the same coin' (Hollnagel, 2009:18) and therefore inextricably linked to the potential benefits sought by every organisation or enterprise; I agree that 'the same characteristics of a system that produce the bright side will regularly provoke the dark side.' (Vaughan, 1999:274).

After the literature review revealed the differing usages of the term "risk indicator", the question raised was what constituted a "risk indicator" and how and why it may differ from a performance indicator. I synthesised the literature, comparing and contrasting work on the position of performance indicators within risk management. This work was enriched by consideration of work on risk perception as exemplified by Slovic (2000): this examines the ways individuals perceive detrimental outcomes against those with beneficial outcomes. Other authors are cited where appropriate. This paper provides a summary of the outputs derived from this synthesis and the implications for how executives might think about risk and the way they use a range of indicators to forestall failure of foresight.

## **CURRENT USAGE OF THE TERM RISK INDICATOR**

In order to establish how the term "risk indicator" has been used within academic writing, I started with a literature search. ProQuest (19 Oct 10) provided 3966 documents which contained the term "risk indicator" within their text and of these, 1152 were in "scholarly journals"; this demonstrated that the term is widely used. As the aim was to determine how the term had been

defined, the search was further restricted to those documents that used the term in the title as it was perceived that these documents would be more likely to have defined their use of the term. This reduced the number to 7. These articles came from the medical, financial, environmental and safety sectors. However, none of these papers defined how they used the term “risk indicator” and so I needed to look more closely at the texts in order to determine how they conceptualised this issue within their field. I consider that it is important for executives to take the broadest perspective as they may be forced into conflicting debate on many of these issues in respect of their workforce’s health or the environment, as much as about the profit and loss account. Therefore the examples provided in this paper seek to encompass this broader spectrum.

Providing work from the financial sector, Consigli et al. (2009) do not define their use of the term “risk indicator”. They do say, however, that ‘the bond–stock yield differential is a risk indicator for reversion in stock prices’ (2009:4). For the majority of their paper they use the term “risk factor” and the term “risk indicator” only appears once more in the conclusions where they say ‘The bond–stock yield differential is a significant factor in the dynamics of the risk process. That is, the differential is a risk indicator for investment decisions’ (2009:22). In their paper we see clearly identified factors, an explicit process and risk indicators which demonstrate a potentially negative performance. Scandizzo (2005) described ‘a methodology for the mapping of operational risk with the objective of identifying the risks inherent in the different steps of a business process, selecting the key risk indicators (KRIs)... and designing the most appropriate control activities’. To others, this might be a clear description of performance management (see Dickstein and Flast, 2009).

In the safety field, the term “risk indicator” is, in general, shorthand for “the performance management of risk management barriers designed to prevent or mitigate unwanted occurrences”. In this context, it is clear to see why the abbreviated term, risk indicator is preferred. Vinnem (2010:770) looks to ‘recommend how risk indicators may be used by individual companies and installations in an efficient manner’ He emphasised that the overall risk indicator is not a prediction of the future risk values, but an indicator which presents precursor events in the past weighted by their fatality risk potential’ (2010:774) and so are designed to provide forewarning. However, as his argument develops, the way of providing this forewarning was by the performance management of the barrier put in place to forestall any problems (2010:774, 775 and 777) as part of the designed safety process. Vinnem proposes ‘10 criteria (that) should be addressed when reviewing current use of indicators or new proposals’. Hopkins (2011) and Hayes (2009) advocate that risk indicators should relate to the performance of risk mitigation barriers. These criteria are compared with my proposals for performance indicators in the next section.

Anderson et al. (1998) only used the term in their title but not in their text. Their discussion was of indicators of health within a community. Cochran et al. (2001), also from the medical field, look at the ‘risk of’ maladies and the prevalence of risk factors within different social groupings’. What they were

examining were the factors that contributed to a clearly defined hazard, namely cancer, an outcome with negative connotations. Hemmingsson and Lundberg (2005) ask whether 'social mobility is related to health and/or risk indicators for ill-health' (2005:518). They used the term "risk indicator" as a shorthand for "indicators of ill-health". Here it can be seen that the risk implied is a negative outcome (i.e. ill-health) and therefore the term may be seen as being used as a performance indicator of health as much as a forewarning of ill-health. They state that 'Nine previously detected risk indicators for mortality in this study were used' (2005:518) raising the question about whether the term "risk factor" may have been more appropriate in many instances.

Travisi et al. (2004) looked at the "usefulness of pesticide risk indicators". They elaborate "Indicators... are expected to help national regulatory institutions to estimate general trends in pesticide risk reduction and to judge the effectiveness of their programmes." They also state that "For each risk indicator, a bandwidth of critical threshold values (CTVs) is defined, which is used to set our reference system for judging the environmental impacts of alternatives." This would suggest that these indicators are being used as control totals within the associated performance model; again, risk indices used as performance indices.

While Moon and Augenbroe (2004) title their paper 'Towards a practical mould growth risk indicator', the abstract states that their paper dealt 'with the first stage of research that focuses on the construction of a 'performance indicator' that expresses the mould growth risk...'. Here it can be clearly seen that the performance indicator of an adverse outcome (labelled a risk) has been given the shorthand label of "risk indicator".

Not only authors but reviewers can add to the mix of terms. Johnson (2008:1515) starts his paper with the statement 'Standards, emissions limits, and other regulatory benchmarks are often used in communications to the public as risk indicators.' This statement is supplemented by a note which says 'The contrast of observed and benchmark levels is one type of "risk comparison"; ... A reviewer ... preferred "risk indicator" to label the standard's role'. However, the label chosen by the reviewer can be seen to create its own ambiguities. As a "standard", these would fall into the category of a performance indicator for negative consequences.

The crossover between risk and performance is recognised in Wein et al. in Oxley and Kulasiri (2007:1690) where they state that in the 'problem formulation stage... Deliberative dialogue is used to ... determine key risk decisions and performance measures (risk indicators and acceptable risk targets) that will be used to evaluate risk reduction strategies and policy alternatives'. Johanson (2008:372) also links the issues of risk and performance indicators; he says 'The extent to which more information from the management accounting system can provide the board with better risk indicators and early warning signals of decreasing organizational performance is an important issue for future research.' The question then becomes whether there might there be a clearer differentiation between a risk and a performance indicator.

As can be seen above, another area of ambiguity is in the differentiation between a “risk indicator” and a “risk factor”; again these terms are used seemingly interchangeably. ‘Risk indicators or factor models are derived from various types of data input that serve to dimension the evolution of a risk profile’ (sic) (Hoffman, 2002:289). Where the academic language used is still immature, as it appears to be within this discipline, each author still needs to define precisely their use of such labels. The way I differentiated these terms is that the “factor” is the fact (what is to be measured) whereas the “indicators” are the data used to evaluate the factor in order to indicate any beneficial or detrimental implications. In this context, many of the uses of the term “risk indicator” would, to me, be termed “risk factors”.

I conclude that the way the term “risk indicator” has been used is as a shorthand for the performance management of risk management barriers or factors designed to predict, prevent or mitigate unwanted occurrences. Unlike circumstances where the failure of foresight is the concern, here the unwanted outcome has been clearly identified and the issues of concern are determining the mechanisms (risk factors) and the probabilities. As this concerns performance with negative connotations, these could be thought of as indicators of jeopardy or, as the term I adopt, “jeopardy indicators”.

## FORMULATION OF PERFORMANCE INDICATORS

Having identified in the previous section the use of risk indicators as a shorthand for performance with potentially negative connotations, this section looks at the issue through a second lens. I examine the characteristics attributed to performance indicators and then compare these with the characteristics attributed to risk indicators to examine any overlap.

Neely et al. (1997) produced an analysis of the literature on performance indicators. They produced a summary of 22 characteristics which are listed in Table 9 (1997:1137).

**Table 9 - Neely et al. (1997) Measure Characteristics**

1.	Performance measures should be derived from strategy
2.	Performance measures should be simple to understand
3.	Performance measures should provide timely and accurate feedback
4.	Performance measures should be based on quantities that can be influenced, or controlled, by the user alone or in co-operation with others
5.	Performance measures should reflect the “business process” – i.e. both the supplier and customer should be involved in the definition of the measure
6.	Performance measures should relate to specific goals (targets)
7.	Performance measures should be relevant
8.	Performance measures should be part of a closed management loop
9.	Performance measures should be clearly defined
10.	Performance measures should have visual impact

11.	Performance measures should focus on improvement
12.	Performance measures should be consistent (in that they maintain their significance as time goes by)
13.	Performance measures should provide fast feedback
14.	Performance measures should have an explicit purpose
15.	Performance measures should be based on an explicitly defined formula and source of data
16.	Performance measures should employ ratios rather than absolute numbers
17.	Performance measures should use data which are automatically collected as part of a process whenever possible
18.	Performance measures should be reported in a simple consistent format
19.	Performance measures should be based on trends rather than snapshots
20.	Performance measures should provide information (rather than opinion)
21.	Performance measures should be precise – be exact about what is being measured
22.	Performance measures should be objective – not based on opinion

Using these criteria, they evaluated a framework that they had developed. In the end they placed a caveat on five criteria (10, 11, 16, 19 and 22) which they said, at that time, were only supported by anecdotal evidence and commented on four others which concerned the processes (the process of designing measures, i.e. prescribing who should be involved; the process of reviewing measures, i.e. ensuring that the measures are modified as circumstances change; the process of capturing data; and the process of reporting performance) (Neely et al, 1997:1148).

In their later work on the process of formulating performance indicators, Franco and Bourne provided a ‘full list of critical characteristics of performance measure’ (2003:706). These are listed in Table 10 (they are numbered sequentially following table 9 in order to identify each at a later stage).

**Table 10 - Franco & Bourne (2003) Measure Characteristics**

23.	Relevant	- measures should be relevant to the business and to the people being accountable for them
24.	Clear and simple	- clarity of definition and calculation, unambiguous, and simple to understand
25.	Balanced	- balanced between non-financial and financial measures
26.	Precise and accurate	- accurate calculations, concise and precise measures to increase credibility
27.	A few measures	- as few measures as possible (4 to 6 per manager)
28.	Measurable	- measures that you can “count”. Objective versus subjective measures. Observable.
29.	Actionable	- applicable and usable in practice (clear view of action)

30.	Dimensional and sufficient	- measures should capture what matters with no overlap
31.	Focus	- measures focused on strategic objectives
32.	Timeliness	- real-time measures (weekly, monthly,) as opposed to annual measures
33.	Cost effective	- balanced between cost and benefits of the measures
34.	Predictable	- measures for predicting future outcomes
35.	Individual	- individual measures versus team measures
36.	Related	- relative measures versus absolute measures

These characteristics can be summarised by their immediacy [3, 13, 31, 32], clarity [2, 9, 10, 18, 24], operability [1, 4, 5, 11, 19, 27, 29, 30, 33, 34, 36], measurability [12, 14, 16, 17, 26, 28], credibility (based on evidence) [7, 8, 15, 20, 21, 22, 23, 24, 34] and relevance to the goals of the organisation [5, this is also based on Neely et al.'s exclusions of 10, 11, 16, 19 and 22 as being process orientated]. This leads to the question as to whether in the way many risk indicators are currently constructed, they are, in fact, just performance indicators that have negative connotations.

Some authors have used performance indicators as their mechanism for managing potential jeopardy. Havold (2007) looked to develop 'a tool to measure safety in shipping' in order to "measure safety orientation" (2007:VII). He used six criteria taken from Kjellén (2000) in shaping good performance indicators: (1) Observable and quantifiable, (2) Valid indicator of the risk of loss, (3) Sensitive to change, (4) Compatible, (5) Transparent and easily understood and (6) Robust against manipulation (Havold, 2007:50). Havold adds two further criteria: (7) Simple to use and (8) Easy to communicate (2007:83). In this example we see how Havold uses performance indicators to measure an outcome with negative connotations.

Scandizzo (2005:239), working in the financial sector, states that key risk indicators should 'be identified on the basis of the information gathered in the previous steps, namely the drivers, the factors and the potential losses, and ranked according to their predictive ability' a similar process to that used for performance indicators. He goes on to say 'KRIs should be: (1) Relevant, strongly related to the frequency of operational failure and/or severity of impact, (2) Non-redundant: If two indicators are strongly correlated, only one should be considered, (3) Measurable: As much as possible, indicators should be objectively (and independently) quantifiable and verifiable, (4) Easy to monitor: Indicator tracking should not be too cumbersome and expensive, and (5) Auditable: Indicators and their sources should be properly documented'. These characteristics of a so-called risk indicator would seem to have a significant correlation with the characteristics previously identified for performance indicators.

While the criteria produced by Vinnem (2010:778) can generally be seen to conform to those for performance indicators, they do also show a divergence. Vinnem's criteria are '(1) combination of lagging and leading indicators, (2)



easily observable performance, (3) intuitive indicators, (4) not require complex calculations, (5) not be influenced by campaigns that give conflicting signals, (6) reflect hazard mechanisms, (7) sensitive to change, (8) show trends, (9) robust to manipulation and (10) validity for major hazard risk.' The main difference is his use of "intuitive indicators" which, by their very nature are not so easily auditable and therefore may be seen, by some, to lack credibility as a performance indicator.

Hale (2009:480), in a debate about safety performance indicators sets the standard for such indicators as 'the standard generic list of requirements for measuring instruments in science'. This would seem to privilege the scientific method over intuition and personal judgement. Such privileging may, however, be seen as contributing to the accident of the space shuttle Challenger (Vaughan, 1996). Zwetsloot (2009:498) points out that 'These facts (near-miss data) were known in the company, and by hindsight they are easy to understand as indicators that process safety was seriously at risk. Nevertheless, this was not leading to appropriate action. Clearly the meaning of these events was not fully understood by many company people, especially the higher managers who have the primary responsibility for safety'. He goes on to question 'Do we have any scientific evidence of such an impact?' and answers 'I am afraid not'. While those who privilege a scientific approach would tend to seek more data, there are those (Stanton et al., 2006:682; Schneier, 2008:23) who would question the relentless collection of data as it may just add to the 'cognitive workload' rather than add clarity or may just be used as an excuse to vacillate. They suggest that an alternative mental approach is required to see the data from a fresh perspective.

It is clear to see why the term "risk indicator" has been used as a shorthand in order to refer to performance indicators with negative values or negative connotations. However, as I have shown, the formulation of these indicators is substantially the same as those used for performance indicators. Therefore we can now begin to appreciate the benefit of having indicators that provide foresight as to whether a defined process or mechanism is likely to deliver benefits or jeopardy. For those looking for the benefits these may be referred to as performance indicators, for those looking at potential jeopardy, these may be referred to as jeopardy indicators. A question, however, remains as to whether, in the context of failure of foresight, there may be a more fundamental differentiation between performance/ jeopardy indicators and risk indicators.

## **CONCEPTUALISING ISSUES OF JEOPARDY**

In this section I examine the question of whether individuals perceive issues of jeopardy differently from the way that they perceive benefits and if they do, how this might relate to risk and performance indicators in the context of "failure of foresight". Recognising how crises induce stress and how stress puts a strain on rational processes, Smart and Vertinsky (1977:324) listed five 'crises-specific pathologies' that affect decision formulation under stress: (1) the narrowing of cognitive processes, (2) information distortion, (3) group pathologies, (4) rigidities in programming and (5) a lack of decision readiness.

The synthesis of the literature led to the identification of eight key issues for the conceptualisation of jeopardy related phenomena: perception bias, denial, missed signals of danger, ambiguity, timeframe, blind spots, outcome versus process focused and seat of understanding. I will address each of these in turn.

The first issue is that of perception bias. Bolt et al. (2010) provide a concise summary of the detailed work previously done on this subject. They outline (2010:19-21) 25 factors where people habitually exaggerate or downplay risk. How anxieties 'cause uncertainty to be denied, risks to be misjudged (sometimes overestimated and sometimes underestimated) and judgements of facts to be held with unwarranted confidence ... these disagreements about risk should not be expected to evaporate in the presence of evidence' (Slovic, 2000:222). The work summarised provides the evidence that a perception of jeopardy does change people's perspective and analysis.

The second issue is one where potential jeopardy produces denial as a psychological defence mechanism as part of 'Anxiety-avoidance ... techniques for reducing its collective anxiety' (Reason, 1997:193). This feature is recognised by many writers. For key examples see: (1) Toft and Reynolds (2005:135) who point to the work of Wolfenstein, who suggests that one of the reasons for such behaviour is: '... a sense of personal invulnerability which is essential for most individuals to maintain if they are to go about their daily business without constantly worrying about all the potential dangers that could threaten them'; (2) Øvretveit (2009:585) who says 'Psychodynamic theory provides understanding of how people protect themselves from feelings of pain through a number of psychological mechanisms. Defensive mechanisms such as projection, splitting and denial would be expected.' In this context "pain" is taken to mean the distress caused by the anxiety over "something bad happening"; (3) Slovic (2000) states that 'The denial resulting from this anxiety-reducing search for certainty thus represents an additional source of overconfidence'. If denial is to be countered, risk indicators therefore need to be based on the falsification of a proposition rather than its confirmation, i.e. a concern should not be excluded until there is strong evidence that it does not pose a concern.

The third issue is the misreading of available data (warning signals); what Slovic (2000:190) calls 'the informativeness of 'signal potential' of a mishap'. This is linked to the question about what constitutes, if not "valid proof", enough evidence on which to act. Vaughan (1996:413-415), Weick (1997:397-400) and Slovic (2000) all refer to this general issue from a physiological point of view while Turner (1976a) and Grint (2008) take a more practically based stance. Together they describe the many mechanisms by which relevant information may be missed in foresight but is very obvious in hindsight. This work suggests that there is likely to be forewarning of a crisis or a disaster and therefore those involved with risk indicators need to keep an open mind (being "mindful" according to Weick and Sutcliffe (2007)). Again, this would suggest that evidence or clues should not be discounted until there is confirmation that they are not relevant, rather than being excluded until they are proved to be relevant.

Linked to this is the issue of silent evidence, where subordinates or other stakeholders withhold evidence for reasons of loss of face, careers or politics (see 'fallacy of complete reporting' Westrum (1982:391)). Kutsch and Hall (2010:250) state that "Some interviewees described risk as a taboo. Because it would entail the disclosure of inconvenient information to project stakeholders, some risks were ignored." After the fall of Singapore during World War 2, Churchill is said to have mused 'Why didn't I know? Why didn't my advisers know? Why wasn't I told? Why didn't I ask?' (Weick and Sutcliffe, 2007:84). This would suggest that all those parties involved should actively seek new information and perspective in order to unearth clues to the unexpected and the unpalatable.

The fourth issue is ambiguity. Gigerenzer, (2002:244) offers that 'In Western culture, people want to live in a world of certain knowledge, not in a world that is hard to understand and predict and where accidents and errors reign.' Slovic endorses this idea (2000:110-111) and believes that humans seek certainty. Adams (2007) provides a taxonomy which groups risks as ranging from the tangible, through those visible through science, to the virtual; Reason (1990:12-13) categorises errors as ranging from behavioural, through the contextual to the conceptual. Both of these categorisations can be seen to range from the tangible to the abstract (the more ambiguous).

Weick (1987:118) described reliability as a 'dynamic non-event... dynamic in the sense that it is an ongoing condition' and a "non-event" because nothing adverse happens. Others (Reason, 1998:294, Gauthereau and Hollnagel, 2005:129 and Hovden et al., 2010:954) have extended the definition to safety. In the context of failure of foresight, I extend the definition to unwanted circumstances with adverse consequences (or risk). There are two important implications. The first is that, being dynamic, the problem is constantly changing and therefore is unlikely to be identified through static indicators, i.e. they are likely to need dynamic indicators which provide a constantly changing perspective in order to spot an emerging issue. As a non-event, success cannot be judged by absence of problems for the right circumstance or set of circumstances that may not yet have presented themselves – Perrow's Union Carbide Factor (1999:356 and 398). Coupled with the "problem of induction", is the use of data to imply an inference that is false, such as the sight of only white swans to infer falsely that all swans are white. This idea was popularised by Taleb (2007). Therefore, those seeking indicators of risk need to be more open to counterintuitive possibility and ambiguous causal links. For, 'In an uncertain world, certainty can be a dangerous ideal' (Gigerenzer, 2002:90).

The fifth issue is the elongation of timeframes for risk. The unexpected can often only be perceived over the longer timescale; this makes it more abstract and the outcome less easily measured. Reason, (1997:227) talks of the 'Insidious accumulation of latent conditions'. Turner (1976b:395) gave examples of incubation periods of over 100 years. In more recent work (Aini and Fakhrol-Razi, 2010:1290) the periods of: 3 to 30 years and 1 to 19 years were also identified. This is in direct contrast to the opinion of Hudson (2009:484) who says that 'To shape managers' behaviour most organisations will require indicators that can show significant variation on a quarterly or

annual basis'. Neely et al. (1997) go further and suggest that indicators need to be sensitive to change on a monthly or even weekly basis. The significance of this difference in timescale is highlighted by Perrow (2007) in what he calls "executive failure" where decisions based on short-term criteria increased the exposure of their organisations to unwanted occurrences over a longer timeframe. Risk indicators therefore need to be geared to the long-term consequences of short-term activity.

The sixth issue is the barriers to recognising what one sees. These barriers are both cultural and managerial. Vaughan (1996:394) points out that 'Aspects of organisational life ... created a way of seeing that was simultaneously a way of not seeing hazards.' The idea that 'seeing is a way of not seeing' is used by Perrow (2007:74), Van de Ven and Poole (1995:510) cites Poggie, Blockley (1998:78) cites Turner, Manning (1999:285) attributes the idea to Burke, and both Cox et al (2006:1125) and Nævestad (2008) cite Vaughan's work. Woods in Starbuck and Farjoun (2005:294) states 'This pattern of seeing the details but being unable to recognise the big picture is commonplace in accidents.' Slovic (2000:190) asserts 'that people, acting within social organisations, downplay certain risks and emphasise others as a means of maintaining the viability of the organisation'. Smith (2004:357) puts the point slightly differently when he talks of 'experience as an inhibitor'; Klein et al (2005:22) agree that 'Experience can sometimes interfere with problem detection'. The final example I use is Pidgeon (1998:100) who explains how cultures may desensitise our perceptions and thus create 'blind spots'. Managerial blind spots are created by phenomena such as the "fallacy of centrality" (Westrum, 1982:393) and "structure secrecy" (Vaughan, 1996:242). Anomalous events, warning signals and other issues that fall outside the normal cultural lens are therefore readily neglected. While a number of mechanisms may create a cultural blindness to risk, the important issue is that this blindness exists. It is therefore suggested that risk indicators should be formulated to avoid this pitfall and signals, including intuition, should not be excluded until they are known to be false.

Seventh is the issue of focusing on the outcome or the process. Reason, (1997:107) points to the debate about whether to focus on process or outcome. A special edition of *Safety Science* (2009, Vol.47) debates the use of leading and lagging indicators and their utility. Hopkins (2009a:508) refers to the views of what he described as the "relativists" who advocate lead and lag relative to a specific point. At no point did these debates introduce the idea of "unit of analysis". I advocate lead and lag relative to the unit of analysis being employed. In this context lag indicators are the outcomes, which in the case of failure of foresight are unacceptable and the lead indicators monitor inputs and processes involved. The Dickstein and Flast (2009) contribution can be seen as a summary for this debate. They argue that by the time an adverse outcome has occurred then it is too late and therefore the prime focus should be on monitoring the process in order to stop anything going seriously wrong. Those writing from a crisis management perspective would be likely to emphasise the importance of effective and efficient recovery to an acceptable steady state. However, writers on High Reliability Organisations would point out that in some circumstances the error (as in Trial and Error), or adverse

occurrence, may just be unacceptable (such as the meltdown of a nuclear power station). In line with this argument, where the potential outcome is unacceptable (the focus of failure of foresight), the risk management activity needs to concentrate on what I term the “lead indicators” based on the inputs and the processes.

The final issue, one that I label “seat of understanding” is a phrase borrowed from Vaughan (1996:261 and 363) who makes no attempt to define it. This expression provides a useful label to debate the importance of experience (presupposed knowledge and skills and the ability to use them (see Reason, 1990)) in the identification of problems. A key piece of work here is that done by Klein et al. (2005). Klein et al. see the recognition of ‘violations of expectancies’ (2005:22) as being important to problem detection, how experience is needed to ‘generate expectancies’ (2005:21) and how ‘A skilled operator is likely to know the conditions under which the system can generate misleading readings and the causes of those readings’ (2005:22). I take this statement to be equally valid, whether the system is a mechanical/electrical device or a socio-technical system such as a corporation. Klein et al. (2005:14) state that (a) ‘cues to problems may be subtle and context-dependent, and (b) what counts as a discrepancy depends on the problem-solver’s experience and the stance taken in interpreting the situation.’ Fink (2000:37) points out that ‘it takes courage to make assumptions’ and that such courage will take the confidence that comes with experience.

I conclude, therefore, that there are good reasons to take the view that a different perspective would be created by adopting a negative perspective of potential jeopardy. The way mental models are constructed when a person considers the doubts, ambiguities and uncertainty that are at the heart of managing risk, require a reformulation of the indicators to ensure that they are more applicable to the task. Therefore, while jeopardy indicators have their place within an overall performance management system, there is also a place for a reformulation of, what are to us, risk indicators.

## **THE FORMULATION OF RISK INDICATORS**

Having established that writers who use the term “risk indicators” are often using these as performance indicators (I have shown that the formulation used has a distinct correlation with the format proposed by those writing about performance indicators), I have also shown that the concept of jeopardy has a distinctive influence on the mental schema used to conceptualise the management of risk issues. I therefore now look to formulate risk indicators to assist in management’s efforts to forestall “failure of foresight”. The aim of the proposed risk indicator is to so change the paradigm that it will enable organisations to inwardly scrutinise themselves from a markedly different perspective. In reformulating these indicators, I consider three additional issues (uncertain causality, categorisation of issues and constant evolution) that have emerged from the literature and address them in turn.

What appears to be central to performance indicators is the assumption of causality within the process (Hale, 2009:480, Hopkins, 2009a&b). Risk

indicators are more a diaspora of ideas. Reason (1997:93) provides the example of a bolt with eight nuts labelled “A” to “H”; Reason points out that there is one way to assemble them correctly and over 40,000 ways (factor 8) to get it wrong. This points to the fact that while a performance indicator (such as “profit”) may be able to be relatively static, the significant unwanted occurrence may, in this example, be one of 40,000 issues; when NASA lost the Shuttle Columbia, it was not that they were unaware of the problem with the heat resistant tiles but that it was but one of 4,222 issues at that time classified as critical (Dunbar and Garud, 2005:209). Therefore rather than relying on a single static indicator, those involved in risk management need to be alert to emerging warnings signs. Risk indicators need initially to be far broader and need to evolve as threats emerge. Hopkins (2009a) provides two examples. The first is ‘Esso experienced a cold temperature incident ... which was a clear warning of what was to come’ (Esso did not react to it and Hopkins rejected it as a Safety Indicator, for, in his view, there needed to be a ‘number of such weak signals to be reported as an indicator.’) I would argue that such warnings (reminiscent of the Challenger accident where ambient temperature was also an issue) should be used as an alert that the task was entering unknown territory (also see “liability of newness” Vaughan, 1996:123). As Hopkins (2009a:508) had pointed out, this idea of picking up warning signals from small events is central to the ideas posted by writers on High Reliability Organisations.

The second is generalised signals such as the concepts of safety culture Hopkins (2009a:510). A link between culture and safety climate is starting to be understood (Mearns, 2009:492); however, as the causal links have not yet been established, the warning signs of a poor safety culture can only be used to alert management to potential problems and therefore start to search for other signs and issues. As such, measures of safety climate could well be used as part of a risk indicator system. Therefore, a risk indicator cannot be expected to be associated with a specific cause but may only offer a signal indicating that a deeper examination of a particular phenomenon is warranted.

Writers on High Reliability Organisations use the logic of Heinrich’s triangle (a correlation between minor and major occurrences) to suggest that minor accidents provide a warning of major ones to follow. Supporters of this stance use evidence such as BP’s higher rate of minor accidents (Baker, 2007:187) as a forewarning of the accident at their Texas City refinery in 2005 and their drilling rig in the Gulf of Mexico in 2010. Hopkins (2009a:460) however, posits that personal safety is no indicator of process safety. Havold (2007:37-38) believes that while ‘Heinrich’s ...“iceberg theory” has been much criticised; ..., much of the criticism might be based on the misunderstanding that the causes of the different accident categories in the model were the same. Heinrich made no such claims; on the contrary, he warned about such misunderstandings.’ Kjellén (2000:487) expresses his concern over the labelling of accident as personal and process for being ‘too simplistic’. Rasmussen (1997:197-198) separates out frequent small-scale accidents from major accidents (plane, train or ferry accidents, hotel fires or plant accidents with localised damage), from large-scale accidents (nuclear melt-downs or plant accidents with consequences for the wider environment). A recent example of this last

category might include the banking crisis of 2008. I label these different levels as chronic, acute and extraordinary and suggest that each is scanned both separately and jointly for clues as to where any ambiguous relationships might just provide an early warning rather than a correlation or any causal links. Therefore, risk indicators should be used to develop propositions about how data from chronic minor events may provide forewarning of acute or extraordinary events to come, rather than being seen to have direct causal links.

Zwetsloot (2009:495) contends that ‘what gets measured is important, what does not get measured, is insignificant’ While this may be apposite for performance indicators, this notion should be of concern within risk management. For risk indicators the concern should not be so much with what is being measured but should be centred more on an endless re-examining of the original question, as well as the quality and reliability of data sources. This is different from the criteria for performance indicators. For risk indicators the emphasis should be more on the constant analysis of the quality (and reliability) of the data rather than just the content of the data. Where the data quality is high, even weak signals should attract greater attention. Therefore risk indicators should not be seen as static items but should be expected to evolve constantly as events and environments change. Smart and Vertinsky (1977:337) talk of ‘Constant scanning of the environment for possible threats’.

From the concerns listed above, a proposition emerges for risk indicators to have a different format. Rather than the need for the immediacy, clarity, operability, measurability, credibility (based on evidence) and relevance to the goals of the organisation required for performance indicators, risk indicators would appear to require something different. For risk indicators a longer perspective is required including an acceptance of ambiguity, a need for the recognition and inclusion of cues, the courage to act on intuition, and a focus on processes in order to intercept problems before they happen. Table 11 provides referencing to the text which provide the origins of characteristics for risk indicators.

**Table 11 - Characteristics of Risk Indicators**

<b>Risk Indicators</b>	<b>Derived From:</b>
Alternative perspective	Perception bias, denial, blind spots
Emergent indicators	Constant evolution
Long-term view	Timeframe
Acceptance of ambiguity	Uncertain causality
Conceivable – “open minded”	Categorisation of issues
Intermittent, non-definitive cues	Ambiguity
Intuitive or Statistical relationships	Seat of understanding
Falsification of intuition concerns	Missed signals of danger
Processes focus	Outcome versus process focused

Table 12 provides a comparison between the characteristics of performance and risk indicators.

**Table 12 - Performance v. Risk Indicators**

Performance or Jeopardy Indicators	Risk Indicators
Standard perspective	Alternative perspective
Static indicator based on core concerns	Emergent indicators
Immediacy (short-term)	Long-term view
Clarity	Acceptance of ambiguity
Operability (actionable)	Conceivable – “open minded”
Measurability	Intermittent, non-definitive cues
Causal Relationships	Intuitive or Statistical relationships
Confirmation by credible evidence	Falsification of intuition concerns
Outcomes focus	Processes focus

## IMPLICATIONS

Having suggested the reformulation of risk indicators, I would reiterate that these are not meant to replace performance indicators such as; ‘data that indicates there may be something wrong with the system’ (Mearns, 2009:491). I would re-label these as jeopardy indicators, as they have a performance management function. Hollnagel et al. (2006) and Vaughan (1999) remind us that unwanted occurrences do not need malevolent intent or even mistakes but, due to the interactive complexity of organisations, can occur when caused by good people doing normal things. Where there is a clear system that provides observable data, performance indicators, as described across the rich literature base, should continue to be used to identify and forestall unwanted occurrences. I advocate the use of risk indicators in order to address some of the inbuilt and inherent resistance to addressing adverse occurrences when senior management is faced by the ambiguous and complex ‘wicked messy problems’ (Grint, 2008; Hancock, 2004; Hancock and Holt, 2003) that is their natural domain. In a simplified differentiation, when there is a relatively well defined system and it is possible to see what is likely to go wrong, then safety or jeopardy performance indicators may be most suited to the task. However, when the system is ill-defined, such as complex mechanisms and interactions existing within a corporate body, where the unwanted may appear from many unforeseen directions, then a risk indicators system may be a more suitable option.

The criteria described in Table 11 provides a further test against which the use of the term “risk indicator” may be judged. Looking at the work of Traversi et al. (2006) in risk indicators for pesticides within an ecosystem, the delineation developed in this paper would now enable a reader to see that the Traversi paper is talking about performance indicators where the output is harm to the environment. While the term “risk indicator” is likely to continue to be used as



convenient shorthand, I would advocate the use of the term “jeopardy indicator” in these circumstances.

Failure of foresight is encapsulated in the Höfding problem: ‘How can you recognize something before you know what it is that you are recognizing?’ (Klein et al., 2005:23-24). Using the terminology provided by Smith (1989), the concern addressed by the proposed risk indicator process is *problem identification* (‘perception of stimuli, interpreted as evidence of a problem’s existence’ (1989:965). Smith exhorts us to ‘Specify the existing state - desired state gap, state all evidence, challenge the problem’s existence’ (1989:973) where the triggers spotted are the key problems themselves or just some of the symptoms. Once the existence of a potential problem has been identified and recognised, then work can begin on defining it and securing potential solutions. However, without that initial identification and recognition, the subsequent steps are unlikely to be invoked. Smith (1989:968) suggests that one of the first requirements when problem solving is the need to suspend judgement until a problem’s nature has been determined; to resist the natural desire to tame a wicked/messy problem. Klein et al. (2005:23) suggest that those involved need to change their “stance” in order to raise the ‘level of suspicion’ necessary to detect unforeseen problems. The idea of “level of suspicion” links to Reason’s (1998:299) warning; not, over time, to ‘have forgotten to be afraid’. As ‘a person can detect a discrepancy only if that person is prepared to re-conceptualize the situation, the critical symptoms may be invisible to someone who is not, at some level, already looking for them’ (Klein et al., 2005:26). This re-conceptualising would be stimulated by the use of the reformatted risk indicators. Seeing within a negative mindset, rather than the more positive one associated with “success”, risk indicators provide a fresh perspective from which to view and question both the data available and the assumptions underlying them. It is suggested that the use of risk indicators should be focused on envisaging the “inconceivable”; the necessity to be ready for the inconceivable at the organisational level (Farjoun, 2010:210), at the operational level (Weick, 2010:540), and at the individual level (Cullen, 2001:70). The inconceivable can and does still occur; organisations would therefore be advised to heed Perrow’s (1999) warning (Normal Accident Theory) and consider those situations with potential to produce significant harm. The aim is positive, in the same way as Perrow’s “Union Carbide Factor” is positive, in that it seeks to promote positive action to remedy any freshly exposed problems. I call this approach “constructive pessimism”.

Reason (1997:177) uses the Robens report to warn; ‘Good intentions at the board level are useless if managers further down the chain...remain preoccupied exclusively with production problems,’ This links to the “fallacy of centrality” and may be part of the reason for the gap between expectation and practice which, in Turner’s Disaster Incubation Theory (1978), provides a space for problems to develop. Therefore, unlike the search for the ‘predictive validity’ (Hudson, 2009:483) of performance indicators, risk indicators should be developed to provide forewarning of the unexpected. Fink (2000) suggests that in a ‘worst case / scenario model... the imagination of man can be infinite’ (2000:36). Weick (2005:425) however, citing the 9/11 commission report, warns that ‘Imagination is not a gift usually associated with bureaucracies’.

Fink goes on to suggest a different approach which ‘involves presenting a range of bracketed possibilities... (with) certain signposts... checked along the way’ (2000:37). For Klein et al (2005:14), ‘in many cases, detecting a problem is equivalent to reconceptualizing the situation’. They warn such effort is not easy. Reason (1997:193) talks of ‘*Learned helplessness* ... (where) the energy and will to resolve problems and attain goals drains away’. Woods (2009:498) states that ‘When one starts from the position that organizational failures of foresight are commonplace..., a few patterns emerge: (a) establishing foresight encompasses extremely difficult forms of cognitive work and is an unstable process, ... (b) the difficulties arise from basic dynamic and cyclic patterns in how adaptive systems behave, (c) emerging measures of how and where a system is brittle’. However, not only are systems fragile but so is foresight. Woods (2009:499) questions ‘can an organization step outside itself and examine its own adaptive capacity in order to recognize ... brittleness.’ Remedying failure of foresight is unlikely to be a simple, effort-free task. However, reformatted risk indicators which take into account these issues may provide a new starting point for those involved.

A major limitation for practice is that bringing about such a mental adjustment will not be easy. In addition to the issues described above, such difficulties have been recognised by other authors. Jaques (2010:477) points out that lessons are ‘not hard to see, though much harder to implement’. Chapman (2005:344), when discussing risk assessment comments, ‘Certainly, developing insight into such complex arrangements is a difficult undertaking. But is it impossible?’ The answer given was ‘No’. Finally, Latham and Locke (2006:336), warn that those taking this approach may be seen as “Nay sayers” and advise that ‘People are rotated in and out of this role. If the same people are perceived as the nay sayers again and again, they will lose their credibility within the group.’ Remedies for failure of foresight are likely therefore to be long-term, and hard fought. Future research needs to focus on how such changes may be brought about.

## **CONCLUSIONS**

In this paper I have proposed that there should be at least three interconnected indicators required at the executive level of management. The first, “performance indicators”, used to monitor the delivery of benefits from clearly bounded and defined systems. The second, “jeopardy indicators”, used to monitor the potential jeopardy identified within the clearly bounded and defined systems designed to deliver the desired benefits. The third and perhaps the most problematic are the “risk indicators” which are used to scan for emerging problems whether the causes are exogenous or endogenous.

The paper shows that there is a clear difference in function between the indicators required to support performance management and those required to support risk management. It can be seen that the current use of the term “risk indicator” is, in general, shorthand for “the performance management of risk management barriers designed to prevent or mitigate unwanted occurrences”. It is also clear to see why an abbreviated term is needed; I therefore suggest an alternative, that of “jeopardy indicator”.

I offer a reformulation of the term “risk indicator” to support the risk management task of preventing the failure of foresight. Here the task of the indicator is to overcome the potential for denial and other such behaviours by setting a different paradigm for the evaluation of potential jeopardy to those used to evaluate potential benefits. As such and in direct contrast to performance indicators, those which should be designed to emphasise the need for the immediacy, clarity, operability, measurability, credibility (based on evidence) and relevance to the goals of the organisation, risk indicators would appear to require something different. Risk indicators should focus on the inconceivable with the potential for significant harm; they should be used to emphasise the longer perspective, promote an acceptance of ambiguity, underwrite the courage to act on intuition, need to be inclusive of any and all data until it is falsified and focus on processes and interrelationships in order to intercept problems before they happen.

I believe that this conceptualisation will assist managers in their endeavours to forestall failure of foresight. There is, however, still a need for this reformulation to be tested in practice by examining how far executives consider and prosecute the “inconceivable” for, while these may be excluded within current risk management practices, as experience shows, the inconceivable can and does still happen.



## CHAPTER 5 – EXAMINING FAILURE OF FORESIGHT

### Abstract

The purpose of this paper is to examine the factors (derived from previous research reported in academic literature) associated with failure of foresight in order to develop questions to enable executives to generate a clearer personal mental model.

The paper uses a wide range of academic literature. Based on Turner (1976b, 1978), the paper groups the phenomena identified in previous research under three headings; “failure to see”, “failure to appreciate” and a “failure to act” (in the latter case, consideration within this paper stops at the generation of the desire to act). The construct is centred on the development of cross-understanding (Huber and Lewis, 2010) within an executive team as part of their risk discourse (Renn, 2008a). Using the concept of foresight, the paper examines what questions might be used to recognize previously identified phenomena before they manifest themselves.

The paper finds that a number of the phenomena identified in previous research can only be applied in hindsight as they have extremely ambiguous start rules. The use of these phenomena should therefore be restricted to post incident analysis as they have limited application as part of foresight. Those phenomena that lend themselves to foresight were used to develop a set of prototype questions that now need to be tested empirically.

The results of the research are limited to a theoretical construct and are based on a limited synthesis of the available literature; the research demonstrates the requirement for a further detailed synthesis of the available literature to be conducted. The practical implications of this research are that the findings offer an initial set of questions that link practitioners to the body of academic work related to this area of management.

This paper is useful for both researchers and practitioners in that it gives a clear foresight perspective and therefore starts the process of filtering related constructs into those that may be applied in foresight and those that can only be applied in hindsight.

## INTRODUCTION

Investigations of organisational failure have often laid the blame on “failure of foresight”. Toft and Reynolds (2005:49) list one general type of recommendation from public enquiries into accidents as ‘foresight recommendations (that are made)...in an attempt to forestall problems which could arise in the future’. One such recent example from the UK is Haddon-Cave (2009). Haddon-Cave evoked failure of foresight, both directly (2009:331) and indirectly, saying ‘if he had given careful thought’ (2009:375), as a contributory cause of the crash of Royal Air Force aircraft, Nimrod XV230. Similarly, the Challenger Accident Inquiry Board (CAIB) report (2003:195) said ‘both accidents (Shuttles Challenger and Columbia) were “failures of foresight” in which history played a prominent role’. The CAIB (2003:204) cite Turner (1978:51) where “failure of foresight” is defined as ‘a long incubation period in which hazards and warning signs prior to the accident were either ignored or misinterpreted’ as also do academics such as Vaughan (1996:411) and Barton and Sutcliffe (2010:72).

The need for foresight is espoused across a wide range of academic literature. Foresight is a commonly used concept which has its own dedicated academic journal. However, to quote Pidgeon and O’Leary (2000:21) ‘Few would probably disagree that foresight is limited and as such the identification of warning in advance of a major failure is problematic’; they also warn that ‘the identification of system vulnerability in foresight sets an epistemologically impossible task’. Stockholm (2011:46), believes that by ‘Understanding the underlying causes of our current performance and our part in that performance provides us the insight necessary to resolve existing problems and the foresight necessary to prevent developing problems.’ This sentiment “that organisations fail to learn” is also held by others such as Schobel and Manzey, (2011:47), Elliott et al (2000), Weir (2002) and Qureshi (2007). Those familiar with organisational learning literature will understand that, within that literature, learning consists of two distinct parts: understanding and implementation (adoption of organisations’ routines), but this distinction is not always clear. The foresight provided by understanding, however, does not necessarily lead to successful prevention although it is the assumption of some commentators that the first should “automatically” lead to the other. The issue for this paper is set within the context of moving from understanding of an issue to successful mitigation action and looking at what is to be learned from the current body of knowledge.

A US DOE Handbook (2009) and Reason (2007) offer tests of foresight. These are questions in a form that may be added to the risk assessment process. The DOE’s question is “Did the individual involved in the incident engage in behaviour that others (when asked individually) recognize as being likely to increase the probability of making a safety critical error?” (US DOE, 2009:96). This test is clearly set in the context of hindsight as are the questions posed by Reason. This is indicative of the majority of the debate to date. The main focus of academia has been to examine the mechanisms that are at the heart of crises and accidents. This work has the benefit of hindsight in the quest to develop understanding. Unfortunately for managers, this facility is not open to

them as they manage their organisation. This paper therefore will concentrate on foresight, looking at what questions might be asked and how the emerging context may aid or hinder the conceptualisation of potentially unwanted and damaging occurrences.

The aim of this research is to extract and describe the key concepts from relevant literature and to examine the range of meanings and interpretations given to each in order to provide a rich framework to form the basis of future risk discourse.

This paper adds to Turner's construct by collating and examining a range of the phenomena discussed within existing academic literature that might be part of a mental model of risk within an organisation. The significance of this work is that it looks to differentiate between that which can only be used in hindsight and that which may be applied in foresight.

Following a section that set the context for the chapter, there are four sections. The first will describe the methodology used to conduct the research. The second will review the term "failure of foresight" in order to establish what the construct involves. The third section will examine the mechanisms reported to affect failure of foresight findings. The final section will discuss the implications of the findings for future research and practice.

## **CONTEXT**

The subject of risk receives wide coverage within academic literature from many perspectives. This wide ranging literature examines the concept of risk and uncertainty, models for managing risk and many statistical methods for managing risks and uncertainty. The issue of how risk may be conceptualised has been covered in Chapter 2. In the context of cross-understanding within risk discourse, the concept of risk has been reduced to the "unwanted" in order to open up the discussion. For the purpose of this paper, the label "unwanted" will be retained; it should be assumed to include the unwanted at any part of a transformation process. The literature that most closely relates to this conception of risk ("the unwanted nightmare") is the literature about accidents. This is because the accident literature espoused its purpose as being twofold; (1) to determine the cause and (2) to prevent future accidents. This second purpose is the one that most closely relates to the purpose of risk management ("action taken now to limit the impact of the unwanted in the future") and is the focus of this paper.

In common with the other papers in this series, this is a conceptual paper which is developing the idea of "thinking about how to think about" risk (Wildavsky, 1988:2) or providing "support for thinking about a present situation" (Lagadec, 1993:xiii) in order to provide a "means of sharpening the decision maker's judgement" (Lagadec, 1993:xi). The central focus of this work is on the early stages of the performance management of risk when those involved are trying to conceptualise their concerns. The work is seen to be most relevant to the construction of mental models/schema (Rumelhart, 1981) which takes place in the early stages of risk discourse (Renn, 2008a:159-172). Here we are looking to facilitate "Cross-Understanding" between stakeholders

rather than creating a shared understanding. Huber and Lewis (2010:7) state that cross-understanding “depends on the extent and accuracy of each member’s understanding of each other member’s mental model”. Here the important issues are to understand how others see the issues at hand in order to reach the point where the cross-understanding is clear enough to enable the group to take action. A danger of seeking “common understanding” is highlighted by Sutcliffe (2005:421) where she says that “groups sometimes focus only on those perceptions that are held in common” and thereby limit the discussion to areas with which they are all comfortable. However, as Sutcliffe (2005:421) goes on to say, “it is the divergence in information and perceptions, not the commonalities, that hold the key to detecting anomalies” and this explains a preference for a cross-understanding approach. As with the overarching body of work, the research on which this report is based looks at the issue of risk management at the corporate board level and is focused on enabling individuals, at that level, to develop the cross-understanding necessary in order to formulate their risk management strategies.

The level of analysis will be defined using a premise provided by Vaughan (1996:94) and Grint (2008). This is that there is a point in any hierarchy of large organisations, where managers move from being “Expert” to being “Investigator”; from dealing not with the “Routine” to dealing with the “Novel”, not dealing with the “Specifics” but in “Principles”; not looking at the “Full Detail” but managing “By Exception”; the former are provided by Grint and the final one by Vaughan. A central idea here is the one of “decision distancing” (Smart and Vertinsky, 1977:326) where they state that “in a six-level hierarchy, there may be a 98 percent loss of informational content”. Central to the issue addressed within this paper is therefore how the most appropriate 2% of information is filtered through to top executives.

Lagadec (1993) points out that executives are not able to limit exposure to risk to one specific area, they have to be alert to the unwanted emerging from any area of their organisation or from any cause. He says an expert “can be satisfied with making very specific, limited diagnoses, while (decision makers) must integrate many elements” (Lagadec, 1993:xxiv). Therefore, as well as looking at general risk management, this research has examined literature covering: (1) accident investigation, (2) crisis management, (3) business continuity management, (4) operational risk management, (5) process risk management, (6) project and programme risk management, (7) resilience engineering and (8) high reliability.

The key dilemma for the subject of Risk Management is the dialectic between the practical and the theoretical. On one side of the coin is the need to understand “Risk” and on the other is the desire or need to manage it effectively and efficiently. It could be argued that it requires an “ontological oscillation” (Burrell and Morgan, 1979:266) between being a constructionist (in order to understand risk) and a positivist (in order to manage risk effectively and efficiently). This approach was justified by Snook (2000:76) in his award winning PhD dissertation at Harvard. Renn (1998:49) argues “both extremes, the constructivist and the realist perspective, miss the point, as risks are always mental representations of threats that are capable of claiming real



losses". Therefore, a similar oscillating position is adopted in the construction of this paper. The position taken here is that things do exist but that it is impossible for humans to perceive them accurately because of the imperfections of the human senses (Blaikie, 2007:15-16), the limitation of language (Woolgar, 1980) or that instruments are not yet available to measure them (Lewin, 1945); individuals therefore view the same objects or events but perceive them differently. This has been summarised by Weick (1988:307) in what he called an "enacted environment" as: "the existence of these objects is not questioned, but their significance, meaning and content is". Weick's words endure twenty years after this text was first published. Smith and Elliot (2006) included it (in Chapter 14) as one of their "key readings in crisis management".

## **METHODOLOGY**

The phenomena discussed in this paper emerged from the inductive research of risk governance. The research needs to be seen in terms of Scholarship of Application (Boyer, 1990); here the emphasis is on taking existing knowledge and examining how it may be applied in practice and then reflecting on what that exercise might say about the original knowledge.

The research focuses on the body of existing knowledge pertaining to risk (in its widest sense). Literature from the widest range of disciplines associated with risk was reviewed. These included project management, operational risk management (encompassing Enterprise Risk Management), accident investigation and prevention, crisis management, resilience engineering, High Reliability Organisations, and that which relates to Normal Accident Theory.

The research extracted from the literature and lists the phenomena cited by the authors as having been found in their research which have caused the unwanted occurrences. Over 250 phenomena were identified. A winnowing process took place that identified duplicated coding, overlaps between phenomena and finally they were grouped under related headings. Miller (1956) suggests that the human mind is only capable of relating 5 to 9 ideas at any one time (hence his title "the magical number 7 plus or minus 2"). Therefore the existing body of knowledge needed to be synthesised in order to produce a workable number of categories, while trying not to lose the richness of the full body of work. The aim was therefore to identify about 20 categories under which all of the existing knowledge could be placed. It was, however, accepted that even this may not provide practitioners with an appropriate portal through which to access the existing knowledge. Therefore I looked for a triptych of main headings under which to group the categories.

The final triptych of headings arrived at was 1) "Failure to See", 2) "Failure to Appreciate" and 3) "Failure to Act". The genesis of the first heading, "Failure to See" came from the idea that "seeing is a way of not seeing" (Van de Ven and Poole, 1995) which is examined in more detail later in the paper. The heading was used to capture any phenomena relating to the receiving of warning signals. The genesis of the second heading, "Failure to Appreciate" was Vaughan's (1996) reference to the idea of "Seat of Understanding". The heading was used to capture any phenomena relating to comprehending the

value of warning signals. Finally the heading “Failure to Act” came from the repeated queries by authors as to why individuals, who had had a warning, had failed to prevent a disaster. The heading was used to capture any phenomena relating to the action stimulated by warning signals. Similar categorisation had also been used by Turner (1976b:391) where he wrote about “emergent dangers”; he said, ‘Another problem which recurs at many points in the three reports is that of a failure to see or to appreciate fully the magnitude of some emergent danger.’ Power (2004:44) also used similar categorisation; he said ‘And yet ... an intensified concern for organisational process may also incubate risks of its own, not least the failure to see, imagine or act upon the ‘bigger picture’.’ So between them, the two authors have used failure to see, imagine, appreciate and act. I did not use the heading failure of imagination, not because the idea is not important (see Weick, 1989 and 2005), but because phenomena that might have been placed under this heading seemed to fall more naturally into the debate about seeing warning signals or appreciating what they meant.

The results of the induction process are described below. The paper describes each grouping and shows how they are clustered under each heading. The paper concludes each grouping with an abstraction of the ideas that are seen to be central. The 24 abstractions are offered as a distillation of the body of existing knowledge available to practice.

## **PURSUIT OF FORESIGHT**

In this section I examine the construct “failure of foresight”. First I will look at Stark’s concept of foresight and then will look at the original paper produced by Turner (1976b) on the concept of “failure of foresight”. I will also trace the development of the concept and its application to the present time. As the literature on failure of foresight is limited, this research has also considered papers extolling the requirement for foresight. The purpose of this section is to establish the phenomena that is failing and the reasons why this might be the case.

### **What is Foresight?**

In 1961, Stanley Stark set about describing the construct of “Executive Foresight”. Accepting that the paper is in some ways dated, its core ideas are still useful. Stark’s main point is that while events may be uncontrollable, due the variety of ways in which they may manifest themselves, their consequences, however, are not (1961:42). While what may cause the unwanted issue may be unforeseeable, their consequences are not (1961:37-38). He questions whether anything ‘that is logically possible is unforeseeable’ (1961:42). He quotes Fayol and Copeland when he says ‘planning is...the exercise of foresight’ and ‘to see, in this context, means both to assess the future and make provision for it’; this is, as we shall see later, also a definition of “resilience” (see Wildavsky, 1988:77). Stark adds that ‘Management has no choice but to anticipate the future’ but ‘the ability to forecast is quite limited’ (1961:32). He highlights the fact that ‘man...tends to resemble the ostrich in that his preventive action is often more effective in quieting his fear than in

removing him from danger'; this is the problem of denial. Stark also recognises the issues of “seat of understanding” (1961:40) and “amoral calculation” (1961:42). His paper therefore provides a solid starting point for any discussion on the failure of foresight.

Stark bases some of his work on a 1931 PhD dissertation by Patterson who describes “the ability of foresight”. This consisted of:

- (1) the ability in any situation to think of a large number of consequences,
- (2) the ability to judge among consequences as to their probability,
- (3) the ability to judge among consequences as to their importance, and
- (4) the ability to decide the best course of action to pursue on consideration of all the consequences likely to follow. (1961:35)

As can be seen, central to foresight is the consideration of “consequences” as much as the events themselves.

Stark debates what he calls “temporal foresight” and prediction (1961:36). Table 13 lists the essential differences as he sees them. Stark sees temporal foresight preceding prediction. The importance of these terms is that they provide a warning of the variety of overlapping terms used within the academic literature. As will be explained in a later section, Stark’s characterisation of temporal foresight embraces what is referred to elsewhere as resilience and prediction encompassing what is also referred to as anticipation. Enzer (1980) on the other hand uses the terms “foresight” and “farsight” where the former links to Stark’s “prediction” and the latter links to Stark’s “foresight”. In this paper I adopt Stark’s delineation of the terms and suggest that foresight should focus on “what could occur” as its constant reference point.

**Table 13 - Foresight v. Prediction**

<b>Temporal foresight</b>	<b>Prediction</b>
plural issues (group of events) which <i>could</i> occur	single isolated event which <i>will</i> occur
logic is the only constraint	judgement about reality
logical possibilities	subjective probabilities (strength of expectation)
measured continuously	measured discretely
may be measured ante facto	only post facto

Finally Stark gives us (1961:35) two types of foresight. While foresight “requires the awareness of possible future events that should be taken into account in deciding on a present action”, he divides it further into perceptual and conceptual foresight. Perceptual foresight he describes as “the ability to explore visually possible courses of action...to select the most effective ones for getting solutions to detailed visual problems”. On the other hand he describes conceptual foresight as the ability “to envision a problem situation in such ways that needs or consequences are anticipated ... ability in any

situation to think of a large number of consequences”. Therefore, it can be seen that foresight, in itself, is not a simple phenomenon.

### Turner’s Construct

The concept of “failure of foresight” is taken from Turner (1976b) and his related work on Disaster Incubation Theory (DIT). Turner (1976b:381) divides DIT into six stages, see Table 14, which he describes as “The sequence of events associated with failure of foresight”. This paper will concentrate on the first two stages as they are the ones where failure of foresight originates and are therefore most relevant to my discussions of risk discourse. In his commentary on Turner and Pidgeon (1997), Kippenberger (1999:10) acknowledged that Turner’s work was premised upon physical disaster but that “his findings are readily applicable to many non-physical crises” such as those caused by large scale frauds and other forms of malpractice. Therefore, while I do not assert that Turner’s work can be used to predict, it can be used as a framework around which one can conceptualise all types of risks.

**Table 14 - Stages of DIT**

<p><b>Stage I</b> - Notionally normal starting point:</p> <ul style="list-style-type: none"><li>(a) Initial culturally accepted beliefs about the world and its hazards</li><li>(b) Associated precautionary norms set out in laws, codes of practice, mores, and folkways.</li></ul> <p><b>Stage II</b> - Incubation period: the accumulation of an unnoticed set of events which are at odds with the accepted beliefs about hazards and the norms for their avoidance.</p> <p><b>Stage III</b> - Precipitating event: forces itself to the attention and transforms general perceptions of Stage II.</p> <p><b>Stage IV</b> - Onset: the immediate consequences of the collapse of cultural precautions become apparent.</p> <p><b>Stage V</b> - Rescue and salvage — first stage adjustment: the immediate post collapse situation is recognized in ad hoc adjustments which permit the work of rescue and salvage to be started.</p> <p><b>Stage VI</b> - Full cultural readjustment: an inquiry or assessment is carried out, and beliefs and precautionary norms are adjusted to fit the newly gained understanding of the world.</p>
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Where the aim of foresight is taken to be “to foresee future unwanted events in order to take action seen, both before and after the identified event, as being appropriate”. This literature review traces the development of the concept and its application to the present time. A search of ProQuest (on 14 Nov 2010), using the search strings “failure of foresight” and “failures of foresight” only found 20 scholarly journals containing the phrase in the text or citations; in the end, this number “snowballed” to 39. They start with Enzer (1980), who was writing at about the same time as Turner, but in a different field. There appears

to have been little take-up of Turner's idea until it was used by Vaughan where she used the term in her investigation of the Shuttle Challenger accident (1997:411). While she had also used the term previously (Vaughan, 1996:231), it was not until her later work that the idea seems to have gained traction.

Turner (1976b) described "failure of foresight" (a phrase that he acknowledged was borrowed from another – Wilensky) as:

The collapse of precautions that had hitherto been regarded culturally as adequate ... some large-scale disasters that are potentially foreseeable and potentially avoidable, and that, at the same time, are sufficiently unexpected and sufficiently disruptive to provoke a cultural reassessment of the artefacts and precautions available to prevent such occurrences. (1976b:380)

However, Turner's comments may have been of their time. He stated that:

When a trawler is lost in Arctic fishing grounds, or when a wall collapses onto a firefighting team, there is much less comment than when an accident kills passengers on a suburban commuter train. (1976b:380)

This may no longer be the case. There have been recent cases in the UK of the fire-service and the police being prosecuted under Health and Safety regulations, which have had a significant effect on the service provided. Examples of this are:

"Boy drowned as police support officers 'stood by'". The parents of a schoolboy who drowned in a pond have demanded to know why two police support officers did not try to save their son.<sup>2</sup>

A volunteer coastguard who was nominated for an award for rescuing a schoolgirl from a cliff has resigned after a row over health and safety. Paul Waugh climbed down to Faye Harrison, 13, who was hanging on by her fingertips and about to fall 200ft...He did not wear safety equipment as it would have taken time to go back to his vehicle which was some distance away. (Waugh) climbed down and held on to her for 30 minutes until she could be winched to safety. Mr Waugh was later told that he had broken rules. The Maritime and Coastguard Agency (MCA) said it was not looking for dead heroes.<sup>3</sup>

Firefighters have been ordered to use "common sense" during emergencies after health and safety rules prevented them rescuing a mother who lay dying in a mine shaft for six hours.<sup>4</sup>

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<sup>2</sup>"Boy drowned as police support officers 'stood by'" <http://www.guardian.co.uk/uk/2007/sep/21/1> accessed 5 Nov 10.

<sup>3</sup> "Cliff hero resigns in safety row", <http://news.bbc.co.uk/1/hi/england/tees/7183017.stm> accessed 6 Nov 10.

<sup>4</sup> Scotsman Newspaper Report dated 13 Mar 10: <http://news.scotsman.com/news/Firefighters-told-to-39use-common.6149249.jp> accessed 5 Nov 10.

The 7/7 inquest heard how the transport police held back London underground staff from responding to the incident “and (how) nobody was sent to the track for at least 25 minutes” because of the potential danger to the rescuers.<sup>5</sup>

This would suggest that such incidents now do cause the ‘cultural reassessment of the artefacts and precautions’ of which Turner had previously spoken. Therefore, there must be questions raised over the exclusions Turner articulated.

In accounting for failures of foresight, undesirable events known about in advance but which were unavoidable with the resources available can be disregarded. In addition, little time need be spent on catastrophes that were completely unpredictable. Neither of these categories present problems of explanation. In the former case, because of lack of resources, no action was possible. In the latter, no action could have been taken because of a total lack of information or intelligence. (1976b:380)

The case for the first exclusion needs to be reviewed because of the concept of “production pressure” (Perrow, 1999, first published in 1984) as a source of the unwanted occurrence. Production pressure is said to be an inappropriate balance between the drive for benefits delivery and the resources (including both time and money) allocated to the task resulting in the unwanted, both in terms of outcomes (accidents, disasters or crises) or process (“storming” – see Radell, 2006). Colligan and Murphy (1979:85) describe how workers are put under ‘considerable pressure to increase production.’ This concept is also used by, amongst others, Perrow in his work on Normal Accidents, by Sagan (1993) on how ‘production pressures on lower-level personnel can ... lead to unauthorised or unapproved activity’ and by Vaughan (1996) in her commentary ‘the historically accepted explanation of the Challenger launch decision: production pressure and managerial wrongdoing’. The issue of whether the “appropriate” resource could have been made available by reprioritisation, is a common theme of accident inquiry reports. Therefore, while Turner excluded production pressure, in the current context, failures due to an inappropriate allocation of resources are now likely to be labelled a failure of foresight.

In the case of the second exclusion, there are questions over what, if anything, might currently be accepted to be “completely unpredictable”. Reports from accident inquiries all seem to be able to identify a root cause and they always seem to be able to show that warning signs were available but, for some reason, were missed. Therefore the scope of failure of foresight needs to be expanded to include all potential events, no matter what their source or their predictability.

This widening of the Failure of Foresight concept has already happened elsewhere. Vaughan (1997:85) citing Turner states: “failure of foresight”: long incubation periods typified by signals of potential danger that were either

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<sup>5</sup> <http://www.bbc.co.uk/news/uk-11629992> accessed 5 Nov 10.

ignored or misinterpreted.’ She does not acknowledge any of Turner’s original nuances.

### **Additional Commentary**

Of the 39 articles (found through ProQuest), four were deemed not to have added value to this debate because, while they used the term, they did not come from the specified field of literature and did not reference Turner’s work. Enzer (1980), who was writing at about the same time as Turner, both clarifies and confuses the issue.

In his discussion of failure of foresight in US energy policy, Enzer talks of ‘a failure of foresight, not because current conditions could not be anticipated, but because the US did not act upon available foresight’ (1980:12) and the need ‘to alert a sleeping nation to the significance of the emerging condition’ and the need to consider the full range of long-term consequences (1980:14). He explains that ‘Incorrect forecasts are the result of two possible errors: either surprising changes occurred, or the system did not behave in the manner anticipated by the forecaster. Surprises come from the occurrence of developments, which were not considered likely’ (1980:13). He goes on to say, the ‘futurists consider it more important to “study” the future than to “forecast” it’ (1980:15). Finally, he says that ‘Better handling of uncertainty is the key to developing a farsighted posture’ and that there is an ‘essential difference between foresight...and farsight’. To Enzer foresight is ‘the predictive activity experts engage in when they indicate the most likely future and farsight (is) the understanding of how alternative conditions might develop in the future and how conditions can be changed’ (1980:16). We see the essential difference being whether those involved keep an open mind to emergent trends, what Enzer calls farsight, but what we see as being an essential part of foresight. Enzer’s work is excluded from future consideration because he is discussing scientific prediction of outcomes and consequences and the farsight necessary to see what might change. This is a different phenomenon to the foresight being examined in this paper, which is concerned with logical connections rather than scientifically understood connections.

Further papers were excluded as, although they were from the appropriate field of literature and did reference Turner’s work in some way, they did no more than that. Locke and Golden-Biddle (1997:1045) do however helpfully remind us that ‘The central difficulty ... lies in discovering which ... problems facing an organization are prudent to ignore and which should be attended to’. Some articles identified “failure of foresight” as a generic problem and postulated that their idea was relevant to alleviating the problem (such as: identifying the relevant stakeholder (Bosher et al., 2007), a ‘better use of data’ (Sutcliffe, 2005) and encouraging the use of fresh perspectives (Vaughan, 1997), but did not address failure of foresight directly. In her look at ‘the dark side of organisations”, Vaughan (1999) does however bring to a wider audience Turner’s point that ‘cultural beliefs contributed to “failures of foresight”, a history of discrepant events that were ignored or misinterpreted.

Prior to accidents, decision-makers saw “ill-structured” problems that afterwards became “well-structured”. This should provide a suitable warning about some of the issues of trying to understand the problems of foresight by using hindsight.

The remaining articles do specifically consider failure of foresight. Taking their contributions chronologically:

Grabowksi and Roberts (1997) accepted Turner’s finding ‘that many disasters had long incubation periods characterized by a number of discrepant events signaling danger. These discrepant events were overlooked or misinterpreted during the incubation period, accumulating unnoticed’ (1997:155). Their recommendations were ‘Strong safety cultures help keep issues above ground, thus reducing the possibility of long incubation periods for unseen issues. Oversight, checks and balances, and strong cultural norms are organizational protections and buffers that reinforce an organization’s goals. They can mitigate risk by assuring that errors are caught’ (1997:157).

After having collaborated with Turner, Pidgeon collaborated with O’Leary (Pidgeon and O’Leary, 2000) to examine some more of the preconditions necessary for disasters to occur. They emphasise that (1) Critical errors remain latent, or misunderstood, because of wrong assumptions about their significance. (2) Dangerous preconditions may also go unnoticed because of the inherent difficulties of handling information in ill-structured and constantly changing situations. (3) Uncertainty also arises about how to deal with formal violations of regulations and (4) that when clear-cut warnings do arise, the outcomes are often worse than they might have been because those involved will initially minimise the danger, deny it or delay taking preventative action. They conclude that the barriers to preventing these failures of foresight are ‘information difficulties and organizational politics’.

Weir (2002:306) asks the question why ‘as senior managers...we seem (un)able to confront our role in the failure of foresight.’ His answer is ‘There are a number of reasons ... political, academic, administrative/managerial and philosophical.’ He sees the political cause being at both the macro and micro levels. He sees part of the issue being that accidents are a normal occurrence and therefore our natural reluctance to accept that we have no control over such events is a state of denial; this, in turn leads to the difficulty “in speaking truth to power”. Weir (2002:306) sees the problems that academia lacks ‘professional weight’ for ‘there is no Nobel Prize for Disaster Studies’. He accuses academics of ‘prefer(ring) certainty about the relatively secure but unimportant’ which leads to ‘a failure of academic relevance’. He accuses managers and communities of ‘believing that we have mastered technology’ (2002:306) and so ‘pay lip-service to the notion of “normal accidents” without being able to accept that the very normality of accidents is evidence that their occurrence can illuminate the deficiencies in our methods of normal operation.’ The denial is seen as a philosophical need to see flaws in external issues rather than within ourselves. Weir’s



emphasis therefore is on learning and communication. He asks (2002:304) 'Why are we unable to learn the lessons of failure even when they are simple?' This begs the question as to what he means by the label "learn"; for one has to question whether organisational learning is ever "simple".

Chapman (2005) has advocated a proactive stance that included 'a continuous process of monitoring all identified hazards; predicting risk scenarios using a variety of techniques; and using organisational learning to profit from past mistakes. Proactive risk assessment is an answer to two habitual shortcomings, a failure of foresight (Toft and Reynolds, (2005, first published in 1994) and a failure to learn (Weir, 2002)', (Chapman, 2005:350). 'The paper finds that to progress, we need two things:[1] better conceptual models and frameworks that reveal complexity and [2] make systems more transparent and more satisfactory approaches to risk management' (Chapman, 2005:343).

Choo asks the question 'Can organizational disasters be foreseen?' to which he answers 'yes'. He relates this to the concept of "failure of foresight" (2008:34). Choo 'identifies three types of information impairments that could lead to organizational disasters: epistemic blind spots, risk denial, and structural impediment. It examines common information and decision practices that make it hard for organizations to see and deal with warning signals. ... (and) suggests what individuals, groups, and organizations can do to raise their information vigilance'.

Adding to his previous work on failure of foresight, Woods (2009:498) sees 'a few patterns emerge: (a) establishing foresight encompasses extremely difficult forms of cognitive work and is an unstable process, given pressures on or from an organization's management, (b) the difficulties arise from basic dynamic and cyclic patterns in how adaptive systems behave, (c) emerging measures of how and where a system is brittle or resilient provide a critical resource for developing and sustaining foresight.' He concludes (2009:501) that 'Once information about how and where an organization is resilient and brittle can be generated and tracked over time, it can be used to supply the missing control feedback signal for proactive' management. He goes on 'Organizations can use this control signal to assess how resilience is changing: are buffers being depleted? Are margins becoming more precarious? Are processes becoming more rigid? Are squeezes becoming tighter?' The difficulty, at my level of analysis, for those involved in the risk discourse, is whether these questions are appropriate at the level at which they operate within the organisation.

In their examination of firefighters, Barton and Sutcliffe commented that 'we often get so engrossed in what we're doing we don't notice that things have changed, or we ignore signals suggesting we should alter our course (2010:70)'. They went on to connect this to failure of foresight. They said 'we had expected it was caused by firefighters having missed critical cues for changing their actions. Our reasoning came from a large body of research on organizational crises suggesting

that many disasters result from failures of foresight — from the accumulation of unnoticed sets of events' (2010:72). They conclude that (1) When engrossed in an action, we tend not to notice small problems that may grow into large ones. (2) To overcome dysfunctional momentum, we have to be interrupted or create an interruption ourselves. (3) Practice "situated humility." As no one person can solve the problem alone, diverse input is seen to be essential.

This notion of failure of foresight through the incubation period has come to be one of the distinguishing features of scholarship on the critical pre-crisis phase. Finally Jaques (2010) concludes that 'While crisis preparedness and prevention have become established as integral parts of organizational crisis management, there is no agreement on taxonomy and no accepted optimal process to formalize the methodology to deliver effective strategies.' As Jaques says, the label 'incubation period' is used far more often than the label "foresight of failure" (ProQuest on 16 Nov 10 provided 1137 texts in scholarly journals of the label "incubation period"). However the underlying issues remain the same; why do clues, which are so clear after a failure, get overlooked before them?

Following up on the point made about the label "incubation period", in addition to the literature specifically looking at the issue labelled "failure of foresight", consideration needs to be given to general literature of management failure, as well as that orientated towards crisis management, accident investigation or high reliability organisations. While this may not use the label "failure of foresight", the theme behind this work is the same. There is an extensive literature that points to management inadequacies and shortcomings. Some examples of this are: the idea of "prodromes" introduced by Fink (2000, first published in 1986), which comes from the Greek for "running before" and looks at the precursors to crises/ disasters (also used by Jaques, 2010); accident investigation (and the like which looks to identify warning signs in order to prevent similar occurrences (see Reason, 1990 and 1997; Toft and Reynolds, 2005); crisis management (Smith and Elliot, 2006); resilience engineering (Hollnagel et al., 2006) which looks to develop ways of making systems more robust by learning from the past; and finally, the theme concerning "failure to learn" from past experience (Elliot et al., 2000 or Schobel and Manzey, 2011). There is also a link to the concept of Mindfulness (for an example see Weick and Sutcliffe, 2007). Discussions of the causes of organisational failure take many forms. However, as Elliot (2006) acknowledges, the work of how to apply these lessons is much more limited. This paper looks to take a small, tentative step on that path.

But is accurate "foresight" possible? There is a body of work (both popular and academic; see Taleb (2007) who represents the former and McDermott (1996) the latter) which questions whether accurate foresight or predictions are possible. While, in terms of absolute certainty they may be correct, this debate seems to reflect the nature of the discussion between advocates of Normal Accidents and High Reliability. As discussed later, both agree that accidents will happen. While the debate over mechanisms of failure is likely to remain for

some time, few would argue that in our flawed and complex world, not all accidents can be prevented, but some might. The perspective this paper takes is therefore, if some accidents are preventable or their effects might have been foreseen and therefore handled more effectively, why might their warning signs be missed? These missed warnings constitute a failure of foresight.

Work on strategic foresight, as can be found in journals such as *Foresight* or in works such as the papers edited by Tsoukas and Shepherd (2004) were excluded because their focus is on strategic choice, rather than jeopardy prevention. They examine aspects of making the optimal choice, rather than the consequences of making the “wrong” choice. While this body of work has some interesting things to say about thinking about the future, it does not address the issue of failure of foresight *per se*.

In summary, foresight is not about predicting the future, it concerns logical plausibility. However, for practitioners the scope is ever expanding. As accident inquiries seek to allocate blame based on more tenuous causal linkages, consideration may need to be given to what Weick has labelled “failure of imagination” (2005); i.e. what “might happen” even when people have no idea beforehand how it may happen. Foresight might be seen to be focused on the process by which organisations monitor and evaluate that which is changing around them so that they might react appropriately. While some question whether accurate foresight is possible, it is in the nature of mankind to try. While there are many courses of action open to those who try, this research focused on the potential barriers to acting appropriately whereby clues may go unseen or unappreciated. Despite issues of dysfunctional momentum and the extremely difficult cognitive work required to forestall failure, there being no agreement on taxonomy, the need for better conceptual models, and processes to make systems more transparent, some authors provide recommendations of how this might be achieved. The work suggests that a mind open to emergent trends, a process that continuously monitors all identified hazards, the expectation of instability of processes, and the need for emerging measures of how and where the system may become brittle, might help. It reminds us that we do not necessarily notice as things change despite, or because of, oversight, checks and balances, and strong cultural norms. It suggests that there may be issues around organisational learning and communication, involving information difficulties/impairments exacerbated by organisational politics. Research also recommends the better use of data and the involvement of relevant stakeholders in order to solicit fresh perspectives. The picture created is, as yet, piecemeal; it is not anywhere near comprehensive. In the next section I look at what else might be included in such discussion.

## **MISSING THE CLUES**

There is a tendency of those who have had the advantage of hindsight to label those not so fortunate as “sloppy” (Turner, 1994), as ‘banal examples of organisational elites not trying very hard’ (Perrow, 1994:218) or “complacency” (Hopkins, 2001:70). While these terms may be carefully defined in the various papers, the impression created is one where the responsible manager is seen

to be inadequate and, if they had just applied themselves a bit more, the problem would have been identified and the accident/ disaster prevented. While this may be unfair to those involved, there is also a more important issue. Cook and Woods (2006) talk of “Distancing through differencing”. Here people distance (disassociate) themselves from the situation by noticing the differences rather than similarities. If managers involved in accidents or other crises are labelled “sloppy” etc., those who have yet to be involved will distance themselves from such events because they do not see themselves in that way. If foresight is to be available to them, they have to be open to the possibility that the worst might happen to them and their organisation. Therefore, the premise underlying this paper is why might, clever, dynamic, and capable people be induced to miss relevant clues or make a flawed decision necessary to produce a significant failure of foresight?

In this section of the paper, I look at the literature for clues as to what might explain the mental processes which contribute to the acceptance or rejection of potential signals of failure. The purpose of this review is to collate some of the significant concepts (factors) from the wide body of research related to failure of foresight and how they may affect the development of the mental models necessary to conceptualise the issues they face. However (and a significant limitation), there is not the room in this paper to provide a full description of all the issues identified, let alone provide an explanation of the relationship and overlaps between the various phenomena. This must therefore be the subject of a separate paper. The focus of this paper is to provide an initial review of the literature in order to provide preliminary shape to the debate on failure of foresight.

For clarity, the factors identified are grouped into three areas: (1) failure to see the signals, (2) failure to appreciate the significance of signals and (3) failure to act appropriately. This is based on a model where individuals fail to perceive or recognise warnings or assess and respond adequately (Turner, 1976b:391). The concept of mindfulness has been used to provide additional definition to this description. Failure to see the signals would embrace the mindful ideas of “preoccupation with failure” and “sensitivity to operations” (Weick and Sutcliffe, 2007:9 and 12 respectively). Failure to appreciate the significance of signals would also embrace “reluctance to simplify” and “deference to expertise” (Weick and Sutcliffe, 2007:10 and 15 respectively). Failure to act would embrace “Commitment to resilience” (Weick and Sutcliffe, 2007:14). These relationships will be described in more detail below. The key assessment criteria when looking at each concept in the literature is the idea of foresight/hindsight. It is whether the concept can be invoked before the event, or are the associated “start rules” so non-specific that they can only be applied in hindsight. It should also be noted that the literature does not provide a clean separation between the three issues and so descriptions become circular and there is overlap between sections as theories merge.

## **Failure to See the Signals**

I start by looking at the concept of failure to see the signals. Under this heading I look at (1) mindfulness, (2) the inconceivable, (3) barriers to seeing,

(4) denial, (5) context, (6) categorisation of signals, (7) the learning of lessons, (8) data sources and communication, and (9) recognising themselves as an “error-inducing” organisation.

Within mindfulness, Weick and Sutcliffe talk of “preoccupation with failure” and “sensitivity to operations”. Under “preoccupation with failure” (2007:9) they advocate the framing of organisational activity within a pessimistic (negative) mindset: i.e. that every lapse or near miss should be perceived as a forerunner to impending disaster. The organisation should encourage the reporting of errors and that ‘weak signals of failure required a stronger response’. The difficult operational or strategic question then becomes, ‘which signals can be safely ignored?’ Sensitivity to operations reminds organisations to stay ‘attentive to the front line, where the real work gets done’ (2007:12). While the temptation for any board is, in line with a well-used business mantra, “to stay focused on the core business” (Peters and Waterman, 2004); Minns’ (2010:22) ‘findings confirm that a common approach is to *focus on core business*’. Jaques however provides an example of why this focus may lead to a failure to see warning signs. He cites the case of the ‘Dow Corning breast implant controversy...(where) a non-core market which represented a miniscule element of the company’s total sales ... (drove) a \$5billion dollar corporation into voluntary bankruptcy’ (Jaques, 2010:475-476). The question then becomes, where should top executives be looking for signals of potential failure? The answer “everywhere” may be sound in theory but is impractical. **In practice executives need to be clear about their rules for inclusion and exclusion and the risk associated with their delineation.**

The debate about the validity of considering the inconceivable would seem to lead directly back to the debate between Perrow’s (1999) Normal Accident Theory and those who support the concept of the High Reliability Organisation as an alternative. While the advocates for each seem to see these as alternatives, in my reading of this body of work I see them, on this subject at least, as being complementary. I read Perrow’s Normal Accident Theory as a warning that as accidents are inevitable, one should think twice (or more) about the potential consequences before using high risk technology. While these accidents can happen at any time, (both an accident with a 1:100 calculated probability and a 1:10,000,000 calculated probability might still happen tomorrow, with the latter being more likely to have happened within 10 years). This does not however mean that there is no point in 1) trying to put off the inevitable or 2) preparing for such eventualities. In doing so, one must understand that, no matter how many precautions are taken, it is not possible to ensure that such an event will not occur. Therefore, the question is, if you use the technology, can you live with the potential consequences? (In a private email of 1 Nov 2010, Professor Perrow kindly confirmed that this reading correctly represented his views). Therefore, it can be concluded that Normal Accident Theory supports the contention that, even if current risk management practices label an event “highly improbable”, which therefore may be taken as being inconceivable, where these events have the potential to produce significant damage or harm, they should not be subsequently sidelined or ignored, as seems to be the current practice.

But what of the High Reliability school of thought? While Perrow seemed to focus on outcomes, I read the High Reliability theorists as concentrating on the processes necessary to ensure high reliability, i.e. how to turn the calculated probability of 1:100 to one of 1:10,000,000 or greater. Experience, however, shows that even when the calculated probability is very high, adverse events can still happen. For example, Perrow (1999:139) reports that a specific event of a DC10 aircraft had a calculated probability of less than one in a billion, yet the problem occurred 4 times in 4 years. The Haddon-Cave (2009:21) report acknowledged that the Royal Air Force's Nimrod aircraft had flown for 400,000 hours 'with *only* four accidents recorded resulting in the loss of an aircraft' (emphasis added). With the eight barriers to failure that had been designed into the drilling operation on BP's Deepwater Horizon rig in the Gulf of Mexico, the blow out that occurred in April 2010 may well have appeared to them to be inconceivable. While, it might be argued that these were not High Reliability Organisations, Le Porte (1994:207) does not talk of High Reliability Organisations being error-free. Instead he talks of 'examining the conditions which seem substantially to reduce the incidence of regular accidents'. He goes on to say (1994:209) 'we accept ... that systems cannot be designed and operated in ways that can guarantee the avoidance of any failures ... it is folly to suppose ... that one can expect to design systems and operate them in failure-free modes for extended periods.' Roberts points out that High Reliability can be fragile within an organisation (Bourrier, 2005:95): 'We should not suppose that because an organization or an industry is highly reliable at time one it will be highly reliable at time two. Reliability enhancement requires constant attention, is expensive, and is very fragile.' Therefore, neither Normal Accident Theory nor High Reliability literature supports the notion that occurrences perceived as being inconceivable, can or should be ignored. This now raises the question as to whether that which is "inconceivable" may contribute to "failure of foresight".

Weick and Sutcliffe (2007:10) recommend a reluctance to simplify as part of mindfulness because, for organisations, 'the world they face is complex, unstable, unknowable and unpredictable'. Quoting an editorial in the New Yorker, Slovic, (2000:198) described 'fail-safe systems failing' as the 'unforeseeable ... the whispering omen of a hovering future'. Standard risk management procedures use heat maps or matrices to help evaluate probability and consequence. The logic goes that those with the greatest probability and the highest consequences are given priority. Closely linked is the construct of "acceptable risk" as described, for example, by Heimann (1997) or Fischhoff et al. (1981). There is, however, limited debate about how to integrate the concept of acceptability and that of conceivability, leaving the practitioners to find their own solutions; for example, when Radell in Smith and Elliot (2006:296) talks of 'keeping storming within the boundaries of acceptable risk', this is more easily judged in hindsight than it is calculated in foresight. In Chapter 4, I argued that the use of risk indicators should be focused on envisaging the "inconceivable", including the necessity to be ready for the inconceivable at the organisational level (Farjoun, 2010:210), at the operational level (Weick, 2010:540), and at the individual level (Cullen, 2001:70) as the inconceivable can and does still occur. **The question for the**

**executive is therefore, “of those issues that we have labelled so improbable as to be “inconceivable”, which still have such potentially serious consequences (the unacceptable) that we must stay mindful of them?”**

The barriers to recognising what one sees is a fundamental issue in respect of failure of foresight. These barriers might be created within the individual or the organisation. An individual's perception of risk also provides reasons why signals may be missed. There are many texts which investigate risk perception (such as Slovic, 2000) and so the argument will not be repeated here. Three aspects are, however, highlighted here: personal association, timeframe and tangibility. That which affects a person directly is seen to be privileged over that which affects others, the short-term was privileged over the long-term and the tangible privileged over the intangible. Adams (2007) provides a taxonomy which groups risks as ranging from the tangible, through those visible through science, to the virtual; Reason (1990:12-13) categorises errors as ranging from behavioural and the contextual to the conceptual. Both of these categorisations can be seen to range from the tangible to the abstract (the more ambiguous). Within organisations, these barriers are both cultural and managerial. Vaughan (1996:394) points out that 'Aspects of organisational life ... created a way of seeing that was simultaneously a way of not seeing hazards.' The idea that 'seeing is a way of not seeing' is used by Perrow (2007:74), Van de Ven and Poole (1995:510) cites Poggie, Blockley (1998:78) cites Turner, Manning (1999:285) attributes the idea to Burke, and both Cox et al (2006:1125) and Nævestad (2008) both cite Vaughan. Woods in Starbuck and Farjoun (2005:294) state 'This pattern of seeing the details but being unable to recognise the big picture is commonplace in accidents.' Slovic (2000:190) asserts 'that people, acting within social organisations, downplay certain risks and emphasise others as a means of maintaining the viability of the organisation'. Smith (2004:357) puts the point slightly differently when he talks of 'experience as an inhibitor'; Klein et al (2005:22) agree that 'Experience can sometimes interfere with problem detection'. The final example I use is Pidgeon (1998:100) who explains how cultures may desensitise our perceptions and thus create 'blind spots'. Managerial blind spots are created by phenomena such as the "Fallacy of complete reporting" (Westrum 1982:391) and "structure secrecy" (Vaughan, 1996:242). Anomalous events, warning signals and other issues that fall outside the normal cultural lens are readily neglected. While a number of mechanisms may create a cultural blindness to risk, the important issue is that this blindness exists. **Therefore, executive teams need to make themselves aware of the personal and organisational filters that might inhibit their seeing warnings available to them.**

Linked to the previous issues is one of denial. This subject has been raised by many of those writing in the context of failure of foresight. The symptoms of denial can be seen in what has been called "myth management" and "fantasy documents". Vaughan (1996:212) uses the term "myth management" to describe obtaining 'legitimacy (and thus resources) by projecting and living up to a cultural image'. These myths can be perpetuated by what Clarke and Perrow (1996) called "fantasy documents". These are plans that 'are neither

wholly believed nor disbelieved...(they) cover extremely improbable events. They are tested against reality only rarely...(they) are likely to draw from a quite unrealistic view or model of organisations'. For those engaged in risk discourse, these phenomena should alert them to the potential gap between how the executives view their organisations and what really exists. Executives should therefore be concerned to ensure that "fantasies" do not enter into their systems. They should therefore need to **assess whether their plans and policies, which are a product of their bureaucratic process, are likely to withstand 'an abrupt and brutal audit'** (Lagadec, 1993:54) which would become very clear in hindsight.

Context is an important consideration for failure of foresight. The context adds complexity. Lagadec (1993:20) suggests that 'Geographic, cognitive, historical, political, cultural and symbolic factors all shape events'. Reason (1997:93) explains how apparently simple problems have a multiplicity of alternatives. His example is of a bolt with 8 nuts labelled "A" to "H"; Reason points out that there is one way to assemble them correctly and over 40,000 ways (factor 8) to get it wrong. This points to the fact that while performance indicators (such as "profit") may be able to be relatively static, the significant unwanted occurrence may, in this example, be one of 40,000 issues; when NASA lost the Shuttle Columbia, it was not that they were unaware of the problem with the heat resistant tiles but that it was but one of 4,222 issues at that time classified as critical (Dunbar and Garud, 2005:209). For foresight, the relevance is that it is an issue of assessing the workload of any part of any system. For hindsight, this raises questions of the validity of any comments about managerial competence if the factor or workload is not considered. With so many potential problems arising from so many potential sources, executives cannot expect to cover them all. They can, however, expect to be questioned on why they decided what they did. Therefore, **executives need to establish what risks are "acceptable" to them and why, and then test their reasoning to ensure that it is robust and not a "fantasy"**.

Warning signals may come in many different forms and be of different strengths. A number of writers have developed labels for signals of risk. The terms are described in Table 15. Executives need to be aware of the various forms if they are to be able to identify each as they appear. These categories can be used as part of the foresight process. As part of any risk discourse, **executives need to be aware of the incoming data and need to be able to assess it against signals types in order to understand its relevance (both positive or negative) and be able to justify its inclusion or exclusion from the debate.**

**Table 15 - Signal Types**

Type of Signal	Description of Signal	Source
Strong Signal	irrefutable evidence able to alter an organisational paradigm "signal, too strong to explain away, refute , or deny." "a signal that ... overturned the scientific paradigm."	Vaughan, 1996:364, 379.



Routine Signals	<p>“an anomaly that occurs in a predictable manner”</p> <p>“these that occur frequently...even when acknowledged to be inherently serious, loses some of its seriousness as similar events occur in sequence and methods of assessing and responding to them stabilize.”</p>	<p>Vaughan, 1996:246</p> <p>Vaughan, 1997:87</p>
Loss of salience	<p>Warnings signs lose their potency: as a result of research which “Normalises Deviance”.</p> <p>These facts were known in the company, and by hindsight they are easy to understand as indicators that process safety was seriously at risk. Nevertheless, this was not leading to appropriate action. Clearly the meaning of these events was not fully understood</p>	<p>Vaughan, 1996:244, 397</p> <p>Zwetsloot, 2009:498</p>
Weak Signals	<p>“warning signals very close to the normal background noise”</p> <p>“suspected (but un-proven) correlation”, “information is informal and/ or ambiguous”</p> <p>one that was unclear, or one that, after analysis, seemed such an improbable event that working engineers believed there was little probability of it recurring</p>	<p>Lagadec, 1993:47</p> <p>Vaughan, 1996:245, 262, 355</p> <p>Vaughan, 1997:87</p>
Mixed Signals	<p>“Signals of potential danger were followed by signals that all was well, reinforcing the belief in acceptable risk”</p>	<p>Vaughan, 1996:245-263</p>
Messy Signals	<p>“ambiguity of information. Ambiguity means that the same information has multiple (and sometimes conflicting) meanings. Environments and situations that are unpredictable and rapidly changing provide unclear, messy signals, so that people can draw different yet equally plausible conclusions from observing the same ‘objective’ data.”</p>	<p>Sutcliffe, 2005:421</p>
Decoy Signals	<p>The investigation revealed that the entire industry’s attention was drawn towards mining safety and that tip safety was hardly on the agenda. Mining safety worked as a “decoy problem”, obscuring the more serious problems looming in the background (Turner, 1978).</p> <p>“decoy problems” that draw attention away from more serious problems elsewhere.</p>	<p>Rijpma, 1997:21</p> <p>Turner and Pigeon, 1997:42</p>
Missing Signals	<p>where organisations’ barriers prevent salient information being added to the conversation.</p>	<p>Vaughan, 1996:349, 356,358,359</p>
Silent Evidence	<p>“people in other locations had potentially useful information and opinions that they did not enter into the conversation.”</p> <p>“Organisations work very hard at silencing people”.</p>	<p>Vaughan, 1997:93</p> <p>Kerfoot, 2003:294</p>
Misinterpreted Signals	<p>mean one thing; understood to mean the reverse</p>	<p>Vaughan, 1996:315</p>
True but Useless	<p>Often a lack of information drives those affected to fill the</p>	<p>Lagadec,</p>

information	void...with inexact or irrelevant data seized at random. Where data are collected because they are available, not because they are relevant.	1993:81 Grint, 2008:14
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Having raised earlier the construct of “distancing through differencing” (where individuals fail to see the similarities between their own position and that experienced by others and therefore fail to see the lessons to be learnt), this phenomenon is now linked to benchmarking (learning from the experience of others). The lessons may come from external organisations, from near misses or from accidents. In addition, there are the “forgotten lessons”; these can be seen to be closely related to signals that have “lost saliency”. The mechanism might be such factors as “drift” which is discussed later. Other mechanisms that might cause lessons to be missed are “management distancing” and “inattentional blindness”. Reason (1998:296) explains “management distancing”. He says ‘The human controllers of ... systems have become remote from the processes they manipulate and, in many cases, from the hazards that potentially endanger their operations. Both this distancing effect and the rarity of bad events make it very easy to not be afraid, as evident at the Chernobyl nuclear power station’. The term “inattentional blindness” was coined by Mack and Rock (1998) to describe the visual perception of unexpected objects. They concluded that, where an occurrence is unexpected, observers fail to notice it even when the occurrence is fully visible. This is because the observers’ attention is already engaged on other aspects of what is in front of them. (The link to the phenomenon of “decoy signals” may be noted.) **The question for the executive is therefore whether they are seeing all the lessons that are available to them and whether they understand, and therefore take into account, factors that might be working against them in this regard.**

The theme of this section has been the examination of data sources and communication. This is not a simple problem. For example:

The facts in this case ‘were known in the company, and by hindsight they are easy to understand as indicators that process safety was seriously at risk. Nevertheless, this was not leading to appropriate action. Clearly the meaning of these events was not fully understood by many company people, especially the higher managers who have the primary responsibility for safety (Zwetsloot, 2009:496).

Whether the issue is that the executives think they know more than they do know (Westrum’s (1982) fallacies of “centrality” and “incomplete reporting”) or that staff are reluctant to “speak truth unto power” (the “Unrocked boat”, Reason 1997:6); taboo data (Kutsch and Hall, 2010:247), or flaws in internal reporting systems or a failure of auditing or regulatory bodies, the problem often comes down to one labelled as a “failure of communications”. Communications are often cited as being a general issue but the question becomes whether one can judge, at the time, whether what your organisation is doing is good enough. The concern is that this can only be judged in hindsight. **The constant question for an executive is therefore whether the**

**right information is getting to the right people within the right timeframe and how they would know if it was not before it was too late.**

Throughout his book of Normal Accidents, Perrow (1999) points to factors that may indicate an “error-inducing organisation”; the relevant characteristics are set out in Table 16. Woods (2005:296) used Hollnagel’s (1993) ‘five classic patterns ... seen in other accidents and research results’ as the basis for his analysis. Hollnagel’s factors are: (1) a drift towards failure as defences eroded in the face of production pressure, (2) taking past success as reason to be confident, (3) fragmented problem-solving clouds the big picture, (4) not revising assessment as new evidence accumulates, and (5) breakdowns at organisational boundaries. Woods (2009:499), in the case of NASA, cites ‘insufficient time to reflect on unintended consequences of day-to-day decisions, insufficient time and workforce available to provide the levels of checks and balances normally found, breakdowns in inter-group communications, too much emphasis on cost and schedule reduction’. While others may add to this list, together these authors provide a rich picture of factors, which those taking part in risk discourse may use in order to generate foresight about their organisation.

**Table 16 - Error Inducing Organisations**

<b>Page</b>	<b>Factor</b>
p.176	authoritarian organisational structure [Centralisation of power]
p.367	group and power interests
p.370	latency period may be longer than any decision-maker's career'
p.176 and p.230	ambiguous cognitive model; that enables an inaccurate mental model to be created
p.176	dysfunctional systems/ processes
p.246-247	“forced errors” – [“do wrong or be sacked”]
p.187	(“prescribed”) behaviour is hard to enforce
p.189	a system that does not breed cooperation
p.176	economic pressure to perform [“Production Pressure”]
p.175	failure appears to be continuous, but recovery is possible
p.176	complex equipment, barely maintained
p.192	blame transfer outwards from centre

**The question for those conducting risk discourse is whether they have clear evidence that they do not fall into this category of organisation.**

In summary, I have explored nine areas that may contribute to “failure to see” warning signs. These were (1) mindfulness, (2) the inconceivable, (3) barriers to seeing, (4) denial, (5) context, (6) categorisation of signals, (7) the learning of lessons, (8) data sources and communication, and (9) seeing themselves as an error-inducing organisation. Each of these raises questions for an executive who wishes to be alert to such warnings in order to forestall a failure of foresight. The considerations that emerge from the literature pertinent to “failure to see” are summarised in Table 17.

**Table 17 - Forestalling Failure to See**

1.	To be clear about their rules for inclusion and exclusion of subject areas and the risk(s) associated with their delineation.
2.	Of those issues that are labelled so improbable as to be “inconceivable”, which still have such potentially serious consequences (the unacceptable) that we must stay mindful of them.
3.	To make themselves aware of the personal and organisational filters that might inhibit their seeing warnings available to them.
4.	To assess whether their plans and policies, which are a product of their bureaucratic process, are likely to withstand “an abrupt and brutal audit”.
5.	To establish what risks are “acceptable” to them and why, and then test their reasoning to ensure that it is robust and not a “fantasy”.
6.	To be aware of the incoming data and need to be able to assess it against signal types in order to understand its relevance (either positive or negative) and be able to justify its inclusion or exclusion from the debate.
7.	To question whether they are seeing all the lessons that are available to them and whether they understand, and therefore take into account, factors that might be working against them in this regard.
8.	To question whether the right information is getting to the right people within the right timeframe and how they would know if it was not before it was too late.
9.	To question whether there is clear evidence that they do not fall into the category of an “error-inducing” organisation.

### **Failure to Appreciate the Significance of Signals**

In this next section I now examine why signals that have been seen may fail to be appreciated. Under this heading I look at (1) mindfulness, (2) the messenger, (3) synthesis, (4) interpretation of data, (5) drift, and (6) situational comprehension.

Within mindfulness, Weick and Sutcliffe talk of “reluctance to simplify” and “deference to expertise”; these may be seen to contribute to a “failure to

appreciate”. Under “reluctance to simplify” Weick and Sutcliffe (2007:10) describe how ‘people simplify in order to stay focused on a handful of key issues and key indicators’ and how, in their view, high reliability organisations need to ‘take deliberate steps to create more complete and nuanced pictures of what they face of ... the complex ... and the unpredictable’. The perils that emerge are also encapsulated within the construct of “taming wicked/ messy issues” (see Grint, 2008 or Hancock and Holt, 2003). Weick and Sutcliffe however acknowledge that “when you organise, you simplify”. There is a large body of work which acknowledges that the use of heuristics is necessary simply in order to act in a timely manner. This, coupled with Ockham’s razor and Miller’s “Magical Number 7” (Miller, 1956), militates against any espoused “reluctance to simplify”. The question therefore becomes one of how to create the appropriate balance; to simplify the issue enough to be able to conceptualise it but not too much so you fail to appreciate its significance. **The question for the executive is therefore to judge whether they have enough relevant detail to enable them to appreciate the complexity of the mechanisms acting at the time.**

Under “deference to expertise”, Weick and Sutcliffe (2007:15) talk of how ‘Rigid hierarchies have their own special vulnerability to error’. The errors include both a failure to recognise a problem and a failure to act appropriately. Vaughan (1996:261 and 363) provides the phrase “seat of understanding” which I have defined elsewhere (based on work by Klein et al., 2005) to mean having the training, knowledge, experience and current data required to make the appropriate judgements. Structure, culture, power and politics have all been found to militate against judgements and decisions falling to those most appropriate. This issue is debated within the High Reliability Organisation area as the balance between centralisation and decentralisation. The debate involves factors such as where power and authority lies, where does expertise and detailed knowledge lie, the timeliness, completeness and understanding of new data. These rational factors compete with more irrational ones such as hierarchy, need for control, ego and hubris. The question for those conducting risk discourse is therefore how **to judge the most appropriate level within their organisations for decisions to fall, given the need for the appropriate seat of understanding, resource power and need to act in a timely manner.**

In the appreciation of a signal, the messenger may be as important as the message. This is especially relevant when discussing what Adams’ labelled as “virtual risks”; here one is reliant on the expertise and understanding of others. These messengers might fall into three categories: “heroes”, “Cassandras” and those who “cry wolf”. Heroes are those whose warnings are heeded and the unwanted is prevented, Cassandras are those who provide valid warning but are ignored and those who cry wolf are those who provide false warnings (heeded or unheeded). While in hindsight it becomes very clear into which category each warning falls, in foresight it is not so clear. **For risk discourse the question therefore becomes whether the messenger (source of any data) is having an effect on how the data is viewed and, if so, whether this can be judged to be “rational” and therefore “valid”.**

After the data has been gathered and recognised as being important then there is a need to synthesise it to ascertain its full value. As important as this process is to forestalling failure of foresight, there is little literature debating the relative merits of the various forms of synthesis available. Most of the academic literature that relates to risk management and synthesis are looking at the research methodology used in academic papers. Those that are addressing the synthesis of risk data tend to favour mathematically based solutions. There is little work addressing the collation and synthesis of ideas necessary in the formative stages of risk discourse. Weick (2005) describes “Failure of imagination” and notes from the 9/11 Commission Report that ‘Imagination is not a gift usually associated with bureaucracies’(2005:425). While this could have been included under the heading of barriers, it is included here because, in order to counteract failures of imagination, Weick, based on the concept of mindfulness, suggests the replacement of ‘deductive thinking with abductive thinking, shifting a culture of analysis towards a culture of imagination...(a) focus on sense-making rather than decision making’ (2005:436). The danger at the other end of this dimension is that individuals use existing rules or regulations as an excuse for poor analysis or thinking (Toft and Reynolds, 2005:103). **The question for risk discourse is to discuss what method of analysis would be most appropriate to the problem at hand and whether a formal system of analysis may ‘reduce the effect of personal bias’** (Elliot, 2006:403).

Interpretation of the signals (of potential dangers) is subject to errors shaped by a still wider system that includes history, competition, scarcity, bureaucratic procedures, power, rules and norms, hierarchy, culture, and patterns of information (Vaughan, 1996:415). Linked to Vaughan’s summation of factors that shape interpretation are Perrow’s categorisation of victims into four groups (Perrow, 1999:67) and the clear difference in viewing perspective of the insider versus outsiders (Vaughan, 1996:406; Boin and Schulman, 2008:1054). These provide an initial choice of perspectives from which to start discussions of risk. Each may provide a separate starting point for the discourse thus providing the “requisite variety” suggested necessary for a richer analysis; Nævestad traces the “law of requisite variety” back to Ashby (1956) where he suggests that ‘only variety can control variety’. Also linked to the debate on interpretation of signals are factors such as whether a scientific or intuitive approach is used (an issue prominent within Vaughan 1996), hubris (see Weick, 1997:401; Taleb et al., 2009:81), the “problem of induction” (see Snook, 2000:3 and 214; Taleb, 2007:27 and 41; Easterby-Smith et al., 2008:15-106) and “fallacy of centrality” (for the concept see Westrum, 1982:393; for a practical example see Snook, 2000:177). **The question for those involved in risk discourse is to discuss which factors might be acted on and affect the perceptions that contribute to how they appreciate the signals available to them.**

Central to Turner’s ideas of disasters development is the construct of a gap; ‘discrepancy between the way the world is thought to operate and the way it really is rarely developed instantaneously’ (Turner, 1976a:758). This is the gap that enables the “incubation” of the unwanted, the period where discrepancies ‘accumulate unnoticed’. ‘The phenomena of drift ... is a common theme in organisational literature’ (Snook, 200:196). Farjoun, (2005:60-80) talks of

“Safety drift” while Weick and Sutcliffe, (2007:9) talk of a ‘Drift into automatic processes’ as organisations become mindless. Snook’s (2000) construct of “Practical Drift” is a more detailed description. Practical drift is ‘the slow, steady uncoupling of local practice from written procedures’ and this provides a mechanism by which gaps occur; this is seen to be a particular issue where there is ‘local adaptation (that) can lead to global disconnects’. In the context of this paper, it would seem potentially more likely where management has moved from the expert to the investigator, as described above. Related to Practical Drift is Vaughan’s (1996) construct of the “Normalisation of Deviance”. This theory describes a mechanism where ‘signals of potential danger (are) normalised’ (1996:xiv) or become regarded as being normal, i.e. to lose their salience. Vaughan describes sophisticated and nuanced mechanisms that include three factors: “Organisational Culture”, “Culture of Production” and “Structural Secrecy”. Each of these factors is described in its own chapter. Snook sees the difference between practical drift and normalisation of deviance as being that the latter has to do with how the environment affects policy and the former has to do with coordination (Snook, 2000:223). Snook sees the flip side of practical drift as being “practical sailing” which can be summarised as the successful mutual adjustment of autonomous bodies; where local adjustment within a global framework is successful rather than a failure. The question for those involved in risk discourse is **how to recognise each form of drift as it occurs**. While in hindsight this may be clear, this is a different matter in foresight, even when those involved know what to look for.

Linked to “seat of understanding” is “situational comprehension”. Whereas “seat of understanding” is about the person’s endogenous disposition, situational comprehension is about the exogenous factors that play on their ability to comprehend what is happening around them. For the purpose of this paper, situational comprehension has been divided into two of its aspects; the first is the situation itself and the second is how those involved receive the relevant data. The situation itself may be one that is stable, a well tried and tested system which is thought to be well understood. At the other end of the perspective is the new or novel situation. Here the literature has made us aware of two phenomena of interest. They are the “liability of newness” and “unruly technology”. Vaughan extends the idea of liability of newness from its original context but reminds us that the liability of newness includes the necessity of generating and learning new roles; it has costs in time, worry, conflict, and inefficiency; there is an absence of standard routines (1996:275) and that they therefore require interpretive flexibility in the absence of appropriate guidelines; that unexpected glitches are commonplace and need debugging through use; that there are likely to be extensive system-wide problems with technological components; and, that practical rules, based on experience, supplement and take precedence over technical decision-making and formal universal rules (1996:140). There is therefore a high degree of reliance on human interaction with the system that might fail. Mechanisms of failure have been described by Rochlin and Weick. Rochlin (1991:117) describes the concept of “having the bubble”. The bubble is where a person who has the appropriate seat of understanding has a temporary

comprehension of a complex and dynamic situation. The system expects the person to become fatigued or have lapses and at that moment they have to call “lost the bubble” and a deputy, who has been shadowing the situation, steps in. This process demonstrated to Rochlin a clear understanding of the strengths and weaknesses of human comprehension in such circumstances. Closely aligned to the bubble is the phenomenon of “cosmological episodes”. Weick (1993:633) describes a cosmological episode as occurring “when people suddenly and deeply feel that the universe is no longer a rational, orderly system. What makes such an episode so shattering is the sense of what is occurring and the means to rebuild that sense collapse together’. While Stein (2004) contrasts the Three Mile Island incident with Apollo 13’s safe return to earth in order to understand how to prevent such a collapse of comprehension, there needs to be questions **for those involved in risk discourse about how well they understand their system, who will have to handle potential crises and whether they are mentally equipped to do so.**

In summary, we have explored six areas that may contribute to a “failure to appreciate” warning signs: (1) mindfulness, (2) the messenger, (3) synthesis, (4) interpretation of data, (5) drift, and (6) situational comprehension. The considerations for failure of foresight that emerge from the literature pertinent to “failure to appreciate” are summarised in Table 18.

**Table 18 - Forestalling Failure to Appreciate**

1.	The question for the executive is therefore to judge whether they have enough relevant detail to enable them to appreciate the complexity of the mechanisms acting at the time.
2.	To judge the most appropriate level within their organisation for decisions to fall, given the need for the appropriate seat of understanding, resource power and the need to act in a timely manner.
3.	To question whether the messenger (source of any data) is having an effect on how the data is viewed and, if so, whether this can be judged to be “rational” and therefore “valid”.
4.	To discuss what method of analysis would be most appropriate to the problem at hand and whether a formal system of analysis may help to reduce the effect of personal bias.
5.	To discuss which factors might be acting on and affecting the perceptions that contribute to how they appreciate the signals available to them.
6.	How to recognise “drift” as it occurs.
7.	To question how well they understand their system, who will have to handle potential crises and whether they are mentally equipped to do so.



## Failure to Act (Appropriately)

Finally, after having looked at failure to see and failure to appreciate, now we look at reasons for failing to act appropriately. Under this heading we look at (1) Commitment to resilience, (2) Alternative Options, (3) Rule-based or Knowledge-based action, (4) The mechanisms of cohesion (5) Unresponsive bystander, (6) Group dynamics, (7) Amoral calculations, and (8) Failures of organisational learning.

Weick and Sutcliffe highlight the need for “Commitment to resilience”. Weick and Sutcliffe make clear what they mean: they say ‘To be resilient is to be mindful about errors that have already occurred and to correct them before they worsen and cause more harm’ (2007:68). Here we see the need to act (appropriately). They also say:

The ability to cope with the unexpected requires a different mind-set than to anticipate its occurrence. The mind-set for anticipation is one that favours precise identification of possible difficulties so that specific remedies can be designed or recalled. A commitment to resilience is quite different.

This is consistent with Wildavsky’s (1988:77) definitions. He says ‘Anticipation is a mode of control by a central mind: efforts are made to predict and prevent potential dangers before damage is done’; whereas ‘Resilience is the capacity to cope with unanticipated dangers after they have become manifest, learning to bounce back’. These may be restated as anticipation results in a specific “plan B” whereas resilience requires capacity (buffer/ unused capability) with which to respond. In other disciplines this differentiation is not used. This usage of the terms can be contrasted with Schulman (1993:368) where he describes “anticipation” as ‘an approach that equates reliability to invariance’ and “resilience” as ‘responding to, rather than trying to weed out, the unexpected would be the ultimate safeguard of stable performance.’ Hollnagel et al. in an edited volume on Resilience Engineering (Hollnagel et al., 2006:6) say ‘resilience is therefore the ability to create foresight – to anticipate the changing shape of risk, before failure and harm occurs’. To them, anticipation is part of resilience. Therefore as different disciplines define these terms in different ways, two practical questions arise. The first is whether those involved in the risk discourse are clear about how they use the terms, and the second is whether they are clear about the way in which they plan to act (have a plan B or buffer capacity) as they discuss their options.

The second issue is the discussion of options. As part of the discussion of any series of options, it is usual to discuss the advantages and disadvantages of each. Where these options are discussed, this is mostly limited to process rather than discussions of unwanted outcomes or the unintended consequences associated with each option. This may lead to inappropriate action being taken. There is no differentiation between the disadvantages when implementing an option and the potential jeopardy associated with an option. There may therefore be an advantage in more clearly differentiating between process and outcome when considering what action should be taken. Weick (1988:307) warns, in the context of enactment, of the relationship

between action, inaction, understanding, misunderstanding, appropriate and inappropriate action. This part of the discourse may be aided by consideration of an appropriate quadrant analysis tool. Based on the basic “advantages” and “disadvantages”, Vaughan’s (1999) construct of “Bright” and “Dark sides”, the HRO/NAT differentiation between process and outcome, a revised grid is offered in Table 19. Failure to appreciate the differences may lead to a failure to act appropriately.

**Table 19 - Options Quadrant Analysis**

	<b>Processes</b>	<b>Outcome</b>
<b>“Bright side”</b>	Advantages	Benefits
<b>“Dark side”</b>	Disadvantages	Jeopardy

**The question that therefore arises is whether those involved in the risk discourse are clear about the action required (process) and to what end (outcome), and the jeopardy associated with each.**

Many commentators privilege a rule-based approach for action. Enquiry reports often recommend the tightening of rules and so do some academics (see for an example Hopkins, 2008). Linked directly to this is the assumption often that if rules are broken, it is always inappropriate or wrong. Flavell-While (2009) reports a discussion on the practicality of a rule-based approach between Hopkins and Peter Webb. Hirschhorn (1993:148) also debates the practicality of “verbatim compliance” and concludes that management need to develop two classes of procedure. The first is ‘broad in scope and applied to a wide range of circumstance’ and strictly applied. The second is detailed and specific, employees are free to vary it ‘as long as they fulfil its intention’. This links to Schulman’s (1993:357-8) paper on the viability of “verbatim compliance”. He argues that while much of the previous organisational theory would mean that ‘it is reasonable to expect a high degree of rigidity and formal rules’, he advocates caution in the use of such an approach. Reason (1990:44-46) debates Rouse’s model which included when the use of rules may be appropriate, and added to the discussion can be the phenomena of the “liability of newness” or “unruly technology” (Vaughan, 1996). The debate on how rule-based and knowledge-based procedures might be intertwined within the organisation is too extensive to do it justice here and is worthy of a fuller synthesis in its own right. However, even though rules and regulations do provide a starting point for any debate on drift, the validity of rules should not be taken at face value. Therefore, any debate on actions based upon existing rules and regulations also needs to debate how the context or situation might have evolved since the rule was written, in what direction, and whether they need to catch up with practice or practice needs to be reined in by the rules. They therefore need to consider whether the rule has become time-expired, whether it is appropriate for the circumstance, whether the action required is clear and whether the direction is “absolute” or “guidance”. This needs to be done even before consideration of the expertise and competence of the rule writers. **Those engaged in risk discourse need to be aware of the strengths and limitations of rule-based and knowledge-based**

**approaches and be clear when each should be applied within their organisation.**

Linked to this action is the issue of how to ensure that the most appropriate mechanism of cohesion/ coordination is applied in the circumstances. Roberts (1990) and Weick (2005) are examples of authors who use the terminology of pooled, sequential and reciprocal interdependence from Thompson (1967). Snook (2000:153) characterised these as coordination by standards, coordination by plans and mutual adjustment. Linked closely to the mechanism of coordination is the use of rule-based or knowledge-based actions. While accident enquiries often recommend a tightening of rules (with little debate over their advantages and disadvantages), as stated above, there is a substantial body of literature that warns of some of the downsides of relying on rules to ensure safety and reliability. **The question for those involved in risk discourse is therefore to debate the appropriate use of these five mechanisms (standards, plans, mutual adjustment, rules and experience) and how to enhance each and safeguard the organisation against the weakness of each.**

The fourth issue has been referred to as the “Unresponsive Bystander”. Snook and Connor (2006:182) talk of “structurally induced inaction” and refer to a book by Latané and Darley (1970) called “the Unresponsive Bystander”; Ghaffarzadegan (2008:1675) refers to this phenomenon as “social shirking”. Snook and Connor also refer to later work by Latané and Nida (1981:308) which sets down the four conditions under which “bystanders” might intervene. These are that they “notice the event”, perceive it as requiring action, feel responsible for taking action (or not, such as when someone else is in charge, better qualified or has the time) and feel that they have the skills and resources necessary to be effective. Snook and Connor then relate this to decision-making within an organisation. They assert that ‘three psychological processes tend to decrease the likelihood of intervention’ (2006:183). The first is the potential embarrassment of failure. The second is that individuals look to clues from those around them on how to act (what Ghaffarzadegan (2008:1676) called “pluralistic ignorance” – ‘when bystanders assume nothing is wrong because nobody else appears concerned.’) and the third is where responsibility is defused. After the fall of Singapore during World War 2, Churchill is said to have mused ‘Why didn’t I know? Why didn’t my advisers know? Why wasn’t I told? Why didn’t I ask?’ (Weick and Sutcliffe, 2007:84). The question that therefore arises is whether those involved in the risk discourse are **conscious of the potential for inaction by themselves as individuals and of the group overall and what mechanisms they may put in place to guard against these issues.**

Fifth, group dynamics have been clearly shown to have a role in causing a failure to act appropriately. The ones that I will cover here are “groupthink”, “folly” and “risk shift”. The first of these, “groupthink”, has received wide coverage. While the term was coined by William Whyte in Fortune magazine, (1952), the first major studies are attributed to Janis in the 1970s. Over time eight symptoms have been identified and mitigation processes have been developed. In summary these symptoms are: an illusion of invulnerability,

rationalising away warnings, an unquestioned belief in the morality of the group, stereotyping of adversaries, direct pressure to conform, self-censorship of “deviant” ideas, illusions of unanimity and self-appointed “mindguards”. While scholars still debate the exact nature of the phenomenon, there is sufficient evidence to suggest that decision-making groups need to be aware of groupthink’s insidious effects on effective decision-making. Not so well known is the related phenomenon of “folly” as articulated by a historian, Barbara Tuchman (1984). Her criteria for folly are: (1) the action was perceived as counter-productive in its own time, not requiring hindsight (1984:2); (2) feasible alternatives were available (1984:2); (3) the fallacy should be that of a group, persisting over generations of leaders, (1984:2); (4) the role of “Wooden-Headedness” (a source of self-deception) (1984:4-5); and (5) the role played by Cognitive Dissonance (1984:280). Enzer (1980:12) provides a clearly related example of folly from the development of US energy policy in the 1970s. The final issue is “risky shift” which is where ‘The result of group polarization is a failure to take into account the true risk of a course of action followed by a shift towards riskier decision making’ (Choo, 2008:41). Groupthink, folly and risky shift have all been identified as risk factors within the decision making process of groups. Where there is potential for decisions to have disastrous consequences, those involved in **risk discourse should debate whether their group is taking any steps to guard against the threats created by these group dynamics.**

Sixth is the concept of “amoral calculation” in the face of production pressures. Vaughan (1996:35) describes amoral calculation as the ‘rational calculation of cost and opportunities’ which values ‘economic success more highly than the well-being of workers, consumers or the general public’. In the case of the shuttle Challenger, as in many other cases, the violation of rules (see, 1996:57 and 278) is seen to be a symptom. This phenomenon has also been referred to as “good people doing dirty work”. Research suggests ‘that culture, structure, and other organisational factors, in combination, may create a worldview that constrains people from acknowledging their work as “dirty”.... Plus, rather than contemplating or devising a deviant strategy for achieving the organisational goals and then invoking techniques of neutralising in order to proceed with it or rationalising it afterwards, they never see it as deviant in the first place’ (Vaughan, 1996:408). Snook (2000:207) suggests however that ‘Individual responsibility is not ignored’ and that the issues should be framed more on the lines of “good people struggling to make sense,” rather than as “bad ones making good decisions.” Perrow uses the term “Executive Failure” (2007:146) where they ‘knowingly take risks in violation of regulatory law’ (2007:167) in order to maximise profit. ‘This entailed a risk ... that, (in the circumstance he describes) for about a decade ... paid off’. Here we see the interaction between production pressure, consequences over time and their effects on different stakeholder constituencies. The current risk management procedures which allow exclusions on the grounds of improbability or on cost-benefit may be used as a rational justification for such amoral calculations; the Ford Pinto case (Perrow, 1999:310) provides such an example. These cases however need to be separate from what Kakabadse (2010) describes as the “dark side of leadership” which are enacted when people with

socio/psychopathic traits take control of organisations. This becomes a wider issue of governance rather than being an issue of failure of foresight. The question therefore becomes whether those involved in **risk discourse are clear that the criteria they use for making decisions may not be viewed by others, at some later stage, to be amoral.**

Finally, I return to the issue of organisations' learning. A common question in the literature is about why organisations fail to learn from the past; why, when the potential for disaster is clear, the appropriate action was not taken. Smith and Elliot (2007:519) state that 'There is a growing body of evidence that organizations are resistant to learning from crisis' and emphasise that organisational learning is not only about understanding of causes and mechanisms but also the requirement for the 'full cultural adjustment' (2007:52) necessary to prevent the next unwanted event. As stated in the introduction to this paper, the issue with organisational learning is therefore not only the "why" something occurs but a full understanding of the "how" to prevent it. This is therefore a much more demanding standard than is presented by the need to understand "why" something has occurred (as difficult as this question in itself might be to answer). Therefore, the **questions for those conducting the risk discourse** are not only what might occur (including the inconceivable) but also (1) what might cause it, (2) how might it be prevented, (3) is the necessary process in place, (4) are our people effectively trained, (5) do they have the necessary resources, (6) will they recognise the problem should it arise, (7) will they see the right action to take, (8) will they implement the necessary action appropriately, and (9) will we get the same answers if we ask these questions tomorrow?

In summary, I have explored eight areas that may contribute to a "failure to act (appropriately)" on warning signs: (1) commitment to resilience, (2) alternative options, (3) rule-based or knowledge-based action, (4) the mechanisms of cohesion (5) unresponsive bystander, (6) group dynamics, (7) amoral calculations, and (8) failures of organisational learning. The considerations for failure of foresight that emerge from the literature pertinent to "failure to act" are summarised in Table 20.

**Table 20 - Forestalling Failure to Act**

1.	Define the group's understanding of the terms "anticipation" and "resilience".  Define whether the action needed is to create a "plan B" or to generate buffer capacity.
2.	Is the action required about process or outcome and is the jeopardy associated with each of them clear?
3.	To be aware of the strengths and limitations of rule-based and knowledge-based approaches and be clear when each should be applied within their organisation.
4.	To debate the appropriate use of the five mechanisms of action and coordination (standards, plans, mutual adjustment, rules and

	experience) and how to enhance each and safeguard the organisation against the weakness of each.
5.	To be aware of the factors affecting the potential for inaction by themselves as individuals and of the group overall and what mechanisms they may put in place to guard against this issue.
6.	To debate whether their group is taking any steps to guard against the threats created by group dynamics.
7.	To debate whether the criteria being used for making decisions may not be viewed by others, at some later stage, to be amoral.
8.	What might occur (including the inconceivable): (1) what might cause it, (2) how might we prevent it, (3) is the necessary process in place, (4) are our people effectively trained, (5) do they have the necessary resources, (6) will they recognise the problem should it arise, (7) will they see the right action to take, (8) will they implement the necessary action appropriately, and (9) will we get the same answers if we ask these questions tomorrow?

## Summary

In this main section we have discussed a number of mechanisms that may be seen to contribute to the failure of foresight. In order to forestall such failures, we have examined a wide range of academic literature in order to distil a range of mechanisms of failure previously identified. The purpose is to enable us to formulate an initial set of questions to be used during risk discourse. The subject has been broken down into three sub-sections. These subsections were based on the construct of “failure to see”, “failure to appreciate” and “failure to act (appropriately)”. Consideration was given to whether the phenomena could be applied with foresight or whether their application depended on hindsight.

Accepting the limitation of the methodology, the considerations pertinent to failure of foresight that emerge during the analysis of the literature are summarised in Table 21.

**Table 21 - Forestalling Failure of Foresight**

1.	To be clear about their rules for inclusion and exclusion of subject areas and the risk(s) associated with their delineation.
2.	Of those issues that are labelled so improbable as to be “inconceivable”, which still have such potentially serious consequences (the unacceptable) that we must stay mindful of them.
3.	To make themselves aware of the personal and organisational filters that might inhibit their seeing warnings available to them.
4.	To assess whether their plans and policies, which are a product of their bureaucratic process, are likely to withstand “an abrupt and brutal

	audit”.
5.	To establish what risks are “acceptable” to them and why, and then test their reasoning to ensure that it is robust and not a “fantasy”.
6.	To be aware of the incoming data and need to be able to assess it against signal types in order to understand its relevance (either positive or negative) and be able to justify its inclusion or exclusion from the debate.
7.	To question whether they are seeing all the lessons that are available to them and whether they understand, and therefore take into account, factors that might be working against them in this regard.
8.	To question whether the right information is getting to the right people within the right timeframe and how they would know if it was not before it was too late.
9.	To question whether there is clear evidence that they do not fall into the category of an “error-inducing” organisation.
10.	The question for the executive is therefore to judge whether they have enough relevant detail to enable them to appreciate the complexity of the mechanisms acting at the time.
11.	To judge the most appropriate level within their organisation for decisions to fall, given the need for the appropriate seat of understanding, resource power and the need to act in a timely manner.
12.	To question whether the messenger (source of any data) is having an effect on how the data is viewed and, if so, whether this can be judged to be “rational” and therefore “valid”.
13.	To discuss what method of analysis would be most appropriate to the problem at hand and whether a formal system of analysis may help to reduce the effect of personal bias.
14.	To discuss which factors might be acting on and affecting the perceptions that contribute to how they appreciate the signals available to them.
15.	How to recognise “drift” as it occurs.
16.	To question how well they understand their system, who will have to handle potential crises and whether they are mentally equipped to do so.
17.	Define the group’s understanding of the terms “anticipation” and “resilience”.  Define whether the action needed is to create a “plan B” or to generate buffer capacity.
18.	Is the action required about process or outcome and is the jeopardy

	associated with each of them clear?
19.	To be aware of the strengths and limitations of rule-based and knowledge-based approaches and be clear when each should be applied within their organisation.
20.	To debate the appropriate use of the five mechanisms of action and coordination (standards, plans, mutual adjustment, rules and experience) and how to enhance each and safeguard the organisation against the weakness of each.
21.	To be aware of the factors affecting the potential for inaction by themselves as individuals and of the group overall and what mechanisms they may put in place to guard against this issue.
22.	To debate whether their group is taking any steps to guard against the threats created by group dynamics.
23.	To debate whether the criteria being used for making decisions may not be viewed by others, at some later stage, to be amoral.
24.	What might occur (including the inconceivable): (1) what might cause it, (2) how might we prevent it, (3) is the necessary process in place, (4) are our people effectively trained, (5) do they have the necessary resources, (6) will they recognise the problem should it arise, (7) will they see the right action to take, (8) will they implement the necessary action appropriately, and (9) will we get the same answers if we ask these questions tomorrow?

## DISCUSSION

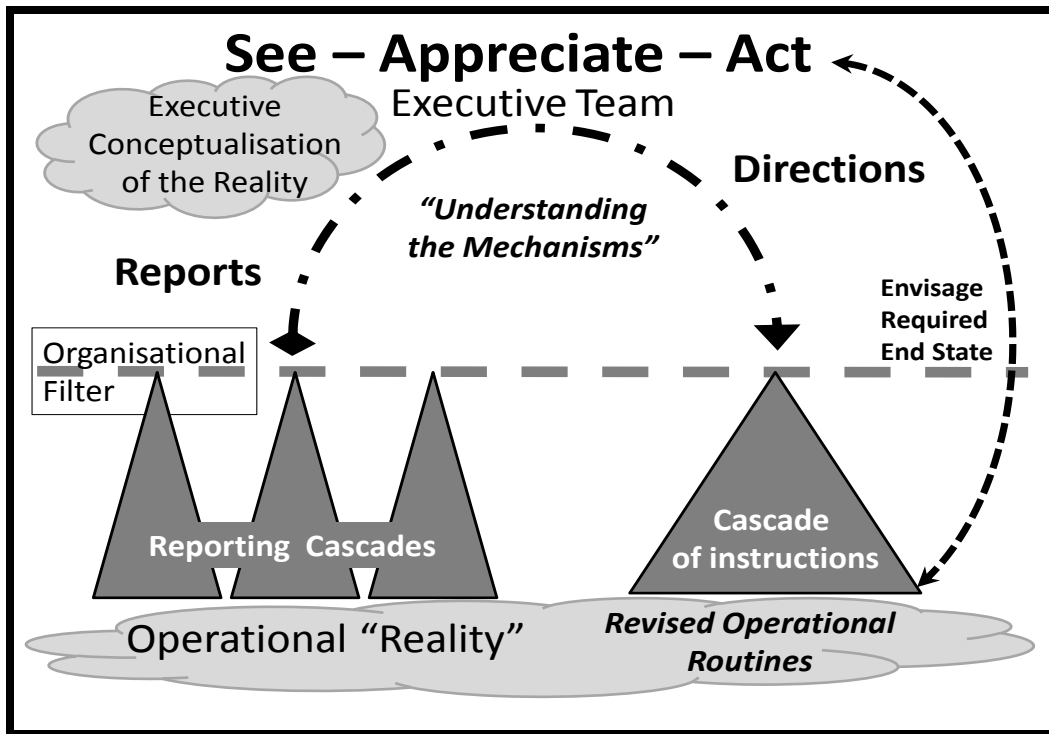
The inconceivable risk, described in this paper, is part of a family of risks that have been given a variety of labels. Taleb (2007) brought the low probability, high impact events, which he calls “Black Swans”, to a wider audience. Merna and Al-Thani (2008:75) refer to these events as “Alligators” and comments that while these are dangerous, he says that they can be avoided with care. Renn (2008a:162) refers to these risks as a “sword of Damocles” that have a ‘very high potential for damage and, at the same time, very low probability of occurrence’. The debate revolves around foreseeability, controllability, manageability and saliency of warnings. Current risk management processes lead to the exclusion of occurrences which are conceived as being very rare, even if their potential for damage or harm might be considered to be extreme. There is a school of thought (stereotyped as the “precautionary principle”, but again this term has a wide range of meanings attributed to it), who advocate that these risks should just be avoided. For examples see Hopkins (2008) and Sheehan (2009:37). This approach, while being theoretically desirable, may not be practical or may occur when the organisation considers the risk to have been managed. Therefore, the focus of risk discourse should continually consider the implications of the potential to create harm and how organisations might try to justify inactivity should the inconceivable manifest itself.



Emerging from an examination of the literature from the perspective of failure of foresight are a number of key issues: (1) the amount of research that needs to be synthesised, (2) the focus on hindsight rather than foresight, (3) the filtering process faced by top executives and, (4) rule-based versus knowledge-based approach to action. I also discuss the key limitations of this research and link these to suggestions for future research.

This paper has provided an indication of the amount of research that is relevant to the issue of failure of foresight. The existing research needs to be synthesised in order to develop a map of key and subsidiary themes. The availability and accessibility of this research to practitioners, in its current form, has to be questioned. There are many competing claims, with apparent overlaps and contradictions. Research is required to collate the available work, to contrast the competing claims and to validate their utility if our understanding of what can go wrong is to be used more effectively to forestall failure of foresight.

It is clear from the literature described above that top executives are “distanced” from the front line activity and that relevant data is filtered as the information is passed to them and as their directions are passed out to their organisation. Adams provides a useful categorisation in this context. Adams (2007:38) describes three levels of data that affect the perception of, in his case, risk as (1) perceived directly, (2) perceived through science (where there is a direct link between the measurement and the phenomenon) and (3) virtual risks (where proxies are measured and judgements then have to be made about the state of the phenomenon of interest). The mechanisms of upward filtering have been discussed and given such labels as “structural secrecy” and “operational secrecy”; this is labelled “reporting cascades”. However, as Vaughan (1996:94 and 259) and Grint (2008) have pointed out, top executives examine issues by exception and look at principles; the label “Organisation filter” represents where the executive’s span of responsibility has become such that the executive moves from being, in Grint’s words, “expert to investigator”. At this point the executive creates their own conceptualisation, which may or may not be accurate, based on the information they receive and their existing understanding of the mechanisms operating within their organisation that produce the outcomes required (the “envisaged end state”). The executive then issues directions, which are translated into operational activity and cascaded through the organisation in order to revise the operational routine required. The implications of this need to be examined for the mechanism by which their general directions are transformed into detailed action at lower levels. A related question is whether, in their conceptualisation of issues, top executives have a detailed conceptualisation of how they expect their direction to avoid failures is interpreted and translated into action at the lower levels of their organisation, or how they envisage the weaknesses in this process and the potential for gaps to occur within which disasters have space to incubate. This potential mechanism of failure (communications barriers) deserves more detailed research and may be part of the answer to why organisations fail to learn. The issues are summarised in Figure 8



**Figure 8 - Communications Barriers**

A key issue arises out of the constructive tension between theory and practice, between academia and practitioners. This has been highlighted by Elliot (2006:394) where he states that 'crisis management (theory) into practice is very difficult'. He talks of 'the priority of much research (is) dealing with complex constructs at a more theoretical level', that 'much that is written on practice is based upon flimsy, possibly anecdotal evidence' (2006:396) and therefore that research on practice should now be exercised with the same rigour as the research into theory. This points to the privileging within academia of the "why" question (Van de Ven, 1989:486), whereas practice is more concerned with "how"; the assumption of some academics who appear to have an expectation is that because the "why" can be articulated, the "how" will naturally follow. Where accident prevention does not follow, managers are labelled "sloppy" or some other such adjective and accused of failure of foresight. When Elliot joins with Smith in the final chapter of their book (Smith and Elliot, 2006), they acknowledge the importance of theory and 'that theory and practice are inextricably interwoven', they acknowledge that there remains a critical tension between the two. They highlight the fact that 'there is often no evidence' on which to base decisions and therefore on which to act. This appears to be a reprise of the debate within Vaughan (1996) as to whether those within NASA had the evidence upon which to act or should have relied on their intuitive judgement in the absence of any clear evidence. This is not to argue against a science "gold standard", where this is possible, but to suggest that progress may also be made by offering tentative propositions, taking small steps with an open mind where clear evidence is not readily available. This highlights one of the many paradoxical ideas identified within the literature; in this case it is on one hand (Hopkins, 2008) insistence on finding clear evidence versus Weick's (2005) warning against "failures of imagination".

Finally, there is considerable literature and practice (reports from enquiries) that privileges the use of a rule-based approach to taking action. However, the arguments for the case are inconclusive as there is a considerable body of evidence in support of the opposing position. This important subject needs further exploration and debate over the utility of rule-based and knowledge-based action if the proposed solution (“more and better rules”) to one case is not to present a potential risk in future cases.

Before concluding, several limitations of this paper need to be acknowledged. The first, as previously stated, is that this paper does not claim to be either a comprehensive review of the literature or a detailed analysis and validation of the phenomena discussed. It is only a collation of some of the phenomena in order to initiate discussion on how to enhance foresight. More detailed research is required to synthesise the main body of work (including that covering constructs such as “incubation period” and “learning organisations”) in order to understand how knowledge of the mechanisms that have been identified as leading to failure may be used to forestall failure.

The second limitation is that this research lacks a variety of perspectives. This work is limited to the single perspective of the author. Consistent with the quest for common understanding, this debate needs to be enriched by other researchers in order to add their perspectives to the discussion. Further research is needed therefore in order to enrich this debate.

The third limitation of this paper is that it is theoretical. Empirical research is now required in order to assess whether the questions developed in this paper lead to a richer understanding of risk within the target community.

## **CONCLUSION**

This paper offers a tentative step towards a theory of how failures of foresight might be forestalled. This work looks to start the process by which a wider body of relevant academic knowledge is applied to practice and whether we look to enhance practice enabling us also to learn about the limitations of existing theory. The premise for the paper is that, if the existing research in this area is valid, what questions does it raise for those trying to forestall such failures. The paper has identified 24 groupings, under three main headings, designed to make the existing research more accessible to practitioners. In turn, this knowledge may be used to stimulate risk discourse and help those concerned to develop a clear mental model, and therefore conceptualisation, of the issues they face. My proposition is that as each individual’s conceptualisation of the issues becomes clearer, this will enable improved cross-understanding within a group over the course of any discussion. This proposition now needs to be tested empirically.

The research has also revealed a vast array of academic work that could be relevant to this subject. There is now a clear requirement for this work to be synthesised in order to identify the scope of the competing claims. In time, this scoping study should lead to further work validating or reconciling these competing claims. All this is necessary before a general theory of Foresight Failure Forestalling can be developed.

The paper has also identified a reflexive dimension to this task. For example, one of the tenets of mindfulness is the “reluctance to simplify”. This research however has identified over 200 factors that previous research would suggest are relevant to failure of foresight. The prospect of developing a model with over 100 variables is daunting. However, not to consider such an option would be to deny ourselves mindfulness. Another example is the contradictory claims for the use of evidence between the research and management paradigms. These issues are reflected within an oscillating ontological basis for this work that may lead to some demanding epistemological challenges in the future.

Now that the literature has been synthesised to the degree that it has, the synthesis needs to be fully tested for its validity. To do this the groupings need to be operationalised as questions for management and then tested for their ‘feasibility (could the process be followed?); usability (how easily could the process be followed?); and utility (did the process provide a useful step in the strategy formulation process?)’ (Platts, 1993:11).

## **CHAPTER 6 - FORESTALLING FAILURE OF FORESIGHT**

### **Abstract**

The purpose of this research is to demonstrate to those involved in risk governance that the relevant academic work has “practical utility”. This paper operationalises the categories of risk derived from a previous synthesis of the literature associated with failure of foresight. The purpose of the operationalised questions is to act as a prompt to provoke new ways of thinking in order to break the hold of an existing paradigm, which can make “seeing a way of not seeing”.

The research used semi-structured interviews of board members/ executives from a wide range of organisations across both the public and private sectors, including government. The purpose of the interviews was to assess the “practical utility” of a set of questions developed from the academic literature. The respondents were asked to comment, from their perspective, on the usability, utility and feasibility of the questions. They were also asked to comment on their appetite to learn about the phenomena that underlie the questions. Where the respondents commented on how they might use the questions, this was also noted.

The paper finds that while the questions do have practical utility, this depends on the attitude with which the individual approaches the questions. With minor amendments to the wording, respondents were able to understand the questions and, where they were not familiar with the issue, they did provide a prompt to their thinking. The respondents also thought that the questions could be used as part of their governance process, despite the fact that some might be addressing very sensitive issues. The respondents’ desire to learn more about the underlying material was found to depend more on their general appetite to learn, than be related specifically to these questions. Respondents had limited familiarity with the extensive existing body of knowledge. They did however generally agree that the questions provided a structure (portal) through which the literature might be investigated as the knowledge had been assembled into more manageable blocks.

The results need to be seen as preliminary. No claim is being made that these questions are, in any way, definitive; however, the results do show that the questions are considered by the respondents to have practical utility. While the results of the research are limited by the methodology used, the research did solicit a wide range of potential views. It is accepted that not all respondents showed an inclination to use the questions as a prompt to their thinking; however, enough did in order to start a debate and to enable further work to be undertaken. Further work should look at how the subject might be taught to its target audience, their willingness to use such a tool, the effect of the tool on the understanding of risk and an organisation’s ability to control or manage risk.

This categorisation and operationalisation of the existing research has not been done before; this paper should therefore be useful to both researchers and practitioners. For practitioners it not only provides a prompt to new ways of thinking (to see the data they have in a different way thereby providing new insights), it may also provide easier access to the extensive body of existing knowledge. On the other hand, it may prompt researchers to reconsider claims that their work has application in foresight or whether it can only be used in hindsight to explain why something unwanted occurred.

## INTRODUCTION

Where organisations have accidents or other major disasters, their management is often accused, by academics and others, of failing to have the foresight to prevent the occurrence. The question that arises therefore is whether there is existing knowledge within the academic literature which, if practitioners were aware of and able to use, may go some way to forestalling such failures.

Project 2 provides a synthesis of the relevant academic literature. It extracted a number of theories, mechanisms and tools that are considered by their authors to contribute to the understanding of how and why organisations fail to see warning signs, appreciate their significance or to act on them in order to forestall failure. Around 250 phenomena were identified as being relevant. After a process of winnowing out duplicates and giving consideration as to whether they could be applied with foresight, these phenomena were synthesised into 24 groupings. The groupings are summarised in Table 22.

**Table 22 - Project 2 Findings**

1.	To be clear about their rules for inclusion and exclusion of subject areas and the risk(s) associated with their delineation.
2.	Of those issues that are labelled so improbable as to be “inconceivable”, which still have such potentially serious consequences (the unacceptable) that we must stay mindful of them.
3.	To make themselves aware of the personal and organisational filters that might inhibit their seeing warnings available to them.
4.	To assess whether their plans and policies, which are a product of their bureaucratic process, are likely to withstand “an abrupt and brutal audit”.
5.	To establish what risks are “acceptable” to them and why, and then test their reasoning to ensure that it is robust and not a “fantasy”.
6.	To be aware of the incoming data and need to be able to assess it against signal types in order to understand its relevance (either positive or negative) and be able to justify its inclusion or exclusion from the debate.
7.	To question whether they are seeing all the lessons that are available

	to them and whether they understand, and therefore take into account, factors that might be working against them in this regard.
8.	To question whether the right information is getting to the right people within the right timeframe and how they would know if it was not before it was too late.
9.	To question whether there is clear evidence that they do not fall into the category of an “error-inducing” organisation.
10.	The question for the executive is therefore to judge whether they have enough relevant detail to enable them to appreciate the complexity of the mechanisms acting at the time.
11.	To judge the most appropriate level within their organisation for decisions to fall, given the need for the appropriate seat of understanding, resource power and the need to act in a timely manner.
12.	To question whether the messenger (source of any data) is having an effect on how the data is viewed and, if so, whether this can be judged to be “rational” and therefore “valid”.
13.	To discuss what method of analysis would be most appropriate to the problem at hand and whether a formal system of analysis may help to reduce the effect of personal bias.
14.	To discuss which factors might be acting on and affecting the perceptions that contribute to how they appreciate the signals available to them.
15.	How to recognise “drift” as it occurs.
16.	To question how well they understand their system, who will have to handle potential crises and whether they are mentally equipped to do so.
17.	Define the group’s understanding of the terms “anticipation” and “resilience”. Define whether the action needed is to create a “plan B” or to generate buffer capacity.
18.	Is the action required about process or outcome and is the jeopardy associated with each of them clear?
19.	To be aware of the strengths and limitations of rule-based and knowledge-based approaches and be clear when each should be applied within their organisation.
20.	To debate the appropriate use of the five mechanisms of action and coordination (standards, plans, mutual adjustment, rules and experience) and how to enhance each and safeguard the organisation against the weakness of each.

21.	To be aware of the factors affecting the potential for inaction by themselves as individuals and of the group overall and what mechanisms they may put in place to guard against this issue.
22.	To debate whether their group is taking any steps to guard against the threats created by group dynamics.
23.	To debate whether the criteria being used for making decisions may not be viewed by others, at some later stage, to be amoral.
24.	What might occur (including the inconceivable): (1) what might cause it, (2) how might we prevent it, (3) is the necessary process in place, (4) are our people effectively trained, (5) do they have the necessary resources, (6) will they recognise the problem should it arise, (7) will they see the right action to take, (8) will they implement the necessary action appropriately, and (9) will we get the same answers if we ask these questions tomorrow?

The aim of this research is to operationalise the categories previously synthesised from literature in order to provide a framework (“the coherent whole” – Ed AMR, 2011) to “provoke” discussions (‘gets us talking, digging, comparing, refining, and focusing on the right question’ – Weick, 2004) about risk governance and to act as “portals” for practitioners into the existing body of knowledge.

The context for this research is the field of corporate governance and its relationship with risk management as illustrated within the UK’s Combined Code (FRC, 2010a). This provides more detailed directions to that provided by the UK’s Institute of Director (IoD, 2009). This approach has a wider application as the UK approach is principles-based rather than being rule-based; therefore, the assumption is that this work will have a general application to other principles-based governance regimes. However, there is an issue over what the sections of the code that refer to risk management mean to practitioners. The Financial Reporting Council (FRC) opened this to debate. The FRC has conducted its own consultation exercise (FRC, 2010b) ‘to explore how companies are responding to the new UK Corporate Governance Code provision on Board’s responsibilities for risk’. It should be noted that, as confirmed in an interview as part of this research, the risks of interest are all circumstances that adversely affect the delivery of the company’s strategy. The Code is not only interested in financial risks. This is therefore consistent with the purpose of my research. The FRC have produced six questions as a catalyst to ‘new good practice’. The questions were:

- What are the respective roles of the board, board committees and management, and how do they interact? Where does oversight end and operational management begin?
- How are boards determining their appetite for risk?
- What are the risks that the board needs to “own”?



- What information and advice do the board and audit committee need to carry out their responsibilities?
- How do boards obtain confidence that the risk management and internal control system function effectively at operational level?
- How do boards report effectively on these issues to shareholders?

My research looks to provide an alternative list of questions to that proposed by the FRC, based on the existing body of knowledge on organisations' accidents and disasters, around which "best practice" may coalesce. This paper is in four sections. The first will describe the methodology used. The second will describe the results of the interviews. The third section discusses the findings and the potential implications for future research and practice. The final section provides my conclusions.

## **METHODOLOGY**

The section on methodology is considered under three headings. The first is context, the second describes the staged process used and the third details the respondents.

### **Context**

The context describes the purpose of the research, sets out the ontological position taken, and the tests to be used.

The purpose of this research is to demonstrate the potential practical utility of the academic work on the subject of risk to practitioners involved in the governance of risk. A secondary purpose of the research is to provide practitioners with a portal into the body of knowledge that exists within the academic literature pertaining to risk. The approach taken (Scholarship of Application – Boyer, 1990) requires that two aspects be examined. The first looks at what practitioners may learn from the application of existing knowledge and the second is what those concerned might learn about our existing knowledge from trying to apply it. I looked to accomplish the first task by providing a set of questions to see if they are found to be useful to practitioners (or as Corley and Gioia (2011) express it, they have "practical utility"). The aim of these questions is to provoke new thinking within the respondents and provide these practitioners with a structured portal through which to access the wider body of knowledge. The second issue concerns what we learn about this knowledge by trying to use it. This was explored during the previous synthesis of the existing body of knowledge (Project 2 – covered in the previous chapter). Two issues were identified during this process. The first was that, just because we "know", this is not enough for us to be able to expect that unwanted occurrences will be prevented; such knowledge needs to be consciously transferred into action. The second is that before an academic is able to suggest that their work can be used to prevent unwanted occurrences, they have to be able to show that their work can be used in foresight and not just in hindsight. If hindsight is required, the model or theory may still have application in understanding an event but cannot, by

itself, be used to prevent unwanted occurrences. These concerns were tested during the interviews and this led to a third issue, which is implicit in the first two. If practitioners were able to exploit existing knowledge, the research needed to address whether practitioners had an appetite to learn, in more depth, ideas currently available within the academic literature. This was examined by looking at whether the respondents feel the need for, or might wish to access, the wider body of knowledge associated with each question and, if so, whether they had preferences or priorities as to which these were.

There is an ontological oscillation associated with research into risk (see Renn, 2008a). In this research, the oscillation is more towards the socially constructed aspect of risk; i.e. how people perceive risk prior to taking action. This research is about whether those engaged make sense of the questions and, in turn, whether the questions can break their current “way of seeing” (a question of perception) in order to enable “new ways of seeing” to emerge. In this way, this research looks to provide a mechanism to counter the blind spots that prevent management at all levels from seeing or appreciating the risks to their organisation and themselves, as these new issues emerge.

To test the effective application of the existing knowledge to practice first required that the 24 groupings from the previous synthesis be operationalised into the form of provocative questions. The emphasis on the need for “good questions” rather than answers comes from John Reed, the Academy of Management's 1999 Executive of the Year (Huff, 2000). While the ultimate test of this approach would be whether their application reduced the number of unwanted events within organisations, this goal is seen to be too ambitious at this point in the research. Therefore the scope of the research will be limited to whether the questions are seen to have “practical utility” as a first step in their validation. Platts (1993:11) provides three criteria for assessment of the question's “practical utility”. The criteria Platts used were **feasibility** (could the process be followed); **usability** (how easily could the process be followed); and **utility** (did the process provide a useful step in the strategy formulation). These criteria have had to be adapted from Platts' research examining the use of a process; in this research the issue was whether a series of questions help to stimulate fresh thinking within respondents. Therefore the criteria were adapted, based on an “I agree/ I disagree” response, as follows:

- Usability became “I understood the question at face value”.
- Utility became “the question provided a useful prompt to my thinking”.
- Feasibility became “I could use the question as part of a risk-based discussion”.

In order to address the second task (the issue of learning), the respondents were asked to respond to the statement “I see benefit from learning more on the issues that underlie the question”.

## **Staged Process**

The method used to address these tasks was broken down into three stages. The first was to operationalise the questions derived from the previous research. The second was to pilot the questions amongst those who train, are

consulted by or advise the target audience. The third part consisted of a series of interviews with members of the target audience to ascertain whether the questions provided them with the stimulus necessary to question their current stance on the management of risk; this was deemed to constitute practical utility.

During the first stage, the method used was for the research to take the statements derived from the literature and adapt them, in such a way as, to make them understandable to practitioners while retaining both their essence and their richness (i.e. their links to the body of knowledge from which they were derived). Stage 1 consisted of two processes. The first was to turn the statements derived from Project 2 (see the previous chapter) into questions. In addition to the issues raised in Project 2, upon a reflexive review, two additional questions were added. The first additional question was based on the premise that every action has both benefit and jeopardy associated with it. If this is the case then a question needs to be raised as to whether too much caution may also have its disadvantages. This leads to the question: "What are the risks to our organisation and society from being too cautious?" The second additional question is derived from the construct of "seeing being a way of not seeing" (covered in the previous chapter) and is linked to the concept of cross-understanding (Huber and Lewis, 2010:7). A question was therefore needed as to whether the group all saw the world through the same filter (paradigms). The morphing of the questions, in its raw format, can be seen in Appendix B. The second process was to analyse each statement in order to identify the issue to which it referred. This process identified four categories. The first was covering the problems being addressed, the second consisted of issues with the group considering the problem, the third was to do with the processes that the group use, and the fourth and final category was to do with the outcome of the process. These categories (problem, group, process and outcome) were considered to be likely to have greater resonance with practitioners than the categories adopted in Project 2 (seeing, appreciating and acting). This view was tested during the pilot study (stage 2).

For the second stage, the method used was to pass the questions in turn to the respondents who, each time, reviewed the questions and amended the document. The purpose of this work was twofold. Firstly it was to ensure that the questions were comprehensible to the target audience, rather than retaining traceability to their original format. Second, it was to ensure that no question was considered to be "irrelevant". The hurdle of "irrelevance" was seen to be high as questions were all derived from literature, so to label a question as irrelevant would be to question the whole area of academic work that had been encapsulated in the question. Before the fifth version of the questions was finalised, it was once again passed to all four respondents for their comments. No amendments were received at this stage. The development of the questions, in their raw format, is set out in Appendix C. This was the form in which the questions were sent out to the respondents in Stage Three.

For the third and final stage, the method used was to send out to each respondent what was called a "workbook" (see Appendix D). The purpose of

the workbook was to provide the respondents with the questions, the background to the questions (thereby retaining some of their richness) and space in which to write notes if they so desired. The respondents were given time to consider the questions and then face-to-face meetings were arranged in order to capture their feedback. If a face-to-face meeting proved to be impractical, then a phone interview was conducted (Table 3 is annotated accordingly). It should be noted that while the answers in the workbook were geared towards an “I agree/ I disagree” response, the responses given during the interviews were far more nuanced. As well as the more reasoned responses (predicated around “why” they espouse the views they do), the interviewer looked for more visceral reactions, which was described in the workbook as the “squirm test”. This approach is what Morgan (1997:306-309) call the “Ah ha!” experience where the question resonates with the respondent as being valid.

The basic format of each interview was to ask just the four questions on Usability, Utility, Feasibility and Learning. The aim was to record the respondents’ perceptions of the usability, utility and feasibility of the questions and the respondents’ reasoning. The respondents were asked whether they wanted to concentrate primarily on those with which they agreed or those with which they disagreed. The respondents were also asked an open question about whether they had any other comments to make. At the end of each interview, respondents were asked whether they felt that they had benefited from the experience and exposure to the questions. While it was expected most respondents would, out of politeness, answer positively, as indeed they did, the purpose of the questions was to provide a benchmark, or “take the mental temperature” of the respondent, against which to judge their other answers. For example: Respondent 10 stated that ‘he did not find the experience as annoying as many others’. He also added that he had spent three times as long as requested in considering the questions because of the interest they provoked. He also stated that he could easily have answered “I agree” to all the questions but this would not have made a very interesting interview. On the other hand Respondents 12 and 15 acknowledged that they were both enthusiastic learners and therefore it would be expected that they may approach the question of learning with more enthusiasm than Respondent 11 who stated that he found difficultly to find time for such work. Respondent 11 expressed the view that he wanted others to synthesise such work into key principles. The question therefore helped to provide indications of the mindset in which respondents framed their answers.

All interviews were recorded. Responses were collated by respondent, using five Excel tables, one for each of the questions asked (Usability, Utility, Feasibility, Learning and additional comments). The recordings were analysed in order to extract the reasoning behind the views held by respondents on the practical utility of the questions. The report, set out below, uses the same format.

## Respondents

The sample, while being pragmatic (being based on personal and professional contacts), did provide diversity in terms of (1) public and private sectors, (2) types of industries (3) years of experience, and (4) the male and female mix.

For Part 2, the aim was to use a small sample of people (five) who advise, were consulted by, or provided training to, those working at the board/ executive level within organisations. They are described in **Table 23**. On receipt of the questions, one person withdrew with the comment “the language in most cases is very (unnecessarily) complex which could alienate your audience”.

**Table 23 - List of Initial Respondents**

Respondent	Description	Sector
1	Female, 33 years' experience, general finance and leadership. BSc (Hons), Cert IoD.  Currently employed in the development and delivery of board level leadership and management training.  Chair of medium size charity, 400 employees, 3500 active volunteers, turnover £40m p.a.	Government and Charity
2	Female, 15 years as a consultant focused on organisational change following 10+ years in international companies as an internal change specialist, MBA.  Specialises in planned change through projects and programmes.	Public and Private
3	Male, 27 years' experience, BSc (Eng)(Hons) FCMA; Head of Risk and Assurance for a business of branded consumer products with a £500m turnover, selling in over 150 countries around the world.	Private and Apparel
4	Male, 35 years in the oil and petrochemical industry. MICHemE, CMIOSH, BSc (Hons in Chem Eng), HSE management.	Oil and petrochemical production industry
5	(Withdrew)	

For Part 3, the aim was to use a sample of people who work at the board/ executive level within their organisations. The sample was self-selecting, 30 people were approached. This included a key representative of the organisation that produces the UK's governance code (Respondent 14) in

order to ascertain whether the questions had practical utility for them and those at whom the code is aimed. Of those who replied and were initially willing to take part, eleven were unable to fix a time in their diary during the window within which the data was being collected, and one Chief Operating Officer withdrew before being interviewed as a result of advice from his legal counsel who was concerned that ‘such sensitive areas ... could comprise (their) employer’; he had only mentioned the subject in passing because he thought that the person ‘might be interested in the breadth of the subject matter’. Those who were finally interviewed are described in Table 24.

**Table 24 - List of Main Respondents**

Respondent	Description	Sector
6	Male, Chief Financial Officer, 18 years' experience, CMA & Qualified Treasurer, financial generalist and IT project management for a privately owned, global brand management house.	FMCG and apparel.
7	Male, Chief Executive Officer, 35 years' experience, FCMI & CFCIPD, 3 Star military officer.	Government
8 (Phone)	Female, Non-Executive Director, 32 years' experience, MSc in statistics, advises on Strategic Change.	Private and Public sectors
9 (Phone)	Male, Managing Director, Banking Services for a global region of a large global financial services company, 20 years' experience, BEng/MBA.	Banking
10	Male, Non-Executive Director to Government Departmental Board, 40 years' experience, Geologist, Accountancy, Advises on finance, commerce, governance and risk.	Extraction industry and Public sector
11	Male, Director General, 36 years' experience, 3 Star military officer.	Government
12	Female, Chief Executive of a Government Agency, 2 Star Civil Servant, 30 years' experience, specialises in Customer Service delivery operations.	Government
13 (Phone)	Female, 50+ years' working experience, financial policy	Government, Public Sector and Manufacturing

14	Male, 25 years' working experience, 7 years with the regulatory body. Representative of the regulatory body that produces the UK's governance code.	Independent Public Body
15 (Phone)	Female, 30 years' working experience of which 20 has been at board level, Business Degree, Specialisation – Marketing. Non-Executive Director, Working mainly in the retail and financial sectors	Public and Private sectors
16 (Phone)	Male, Chief Executive Officer, 37 years' working experience, 11 at board level; Master Mariner. International shipping management company	Shipping Industry
17 (Phone)	Male, Chief Executive, 30 years' working experience in global equity management company.	Finance/ investments

Interviewing was stopped when it was considered that no significant new data would be obtained. Responses had ranged from the enthusiastic to the sceptical. The consensus was clear and the limitations identified and other criticisms were consistent. It was concluded that no new data would significantly affect the findings of this research. The diversity of respondents did provide evidence that different sectors might approach their use of the questions in different ways. It was considered that further work may produce more data on this issue and, while this was considered to be both interesting and relevant to the overall intent, it was seen as being outside the scope of this research.

## DEVELOPMENT OF THE QUESTIONS

As a result of Stages 1 and 2, the original 24 categories were finally reduced to 20 questions, grouped under 4 headings. These headings emerged during the process; they were “the problem”, “the group”, “the process” and “summarising questions”. It was in this form that the questions were presented to the Stage 3 respondents (see Appendix D).

## RESULTS

The results of the interviews are presented under the four headings of “usability”, “utility”, “feasibility” and “learning”. The results contain many contradictory views. There has been no attempt to reconcile these contradictions but only to report them faithfully to enable the reader to see the variety of opinions held. From the outset, it has been accepted that there is unlikely to be a definitive set of questions. It is envisaged that the most that can be achieved is that the majority of the questions have practical utility to

some respondents. The practical utility envisaged is that the questions provoke thinking about the issue and provide an introduction to the body of knowledge that exists on this subject.

## **Usability**

The issue of usability is whether the question was understood as presented. Three main issues concerning usability were raised as a result of interviewing the respondents. The first was cognitive focus, the second was about the specific wording within their individual context and the third was on specific aspects of the wording.

An individual's world view, temporary or fundamental, clearly affected the way they interpreted individual words. This understanding is an individual construct which, on a number of occasions, led to the reader clearly interpreting the text in a way unintended by the author. One example of this was Respondent 8 who interpreted "seat of understanding" in Question 9 to mean "responsibility"; discussions indicated that she had been working on "delegation" around the time she was reading the questions and this had, in her view, clearly affected the way she interpreted certain words. This would suggest that no wording was ever likely to lead to a perfect shared interpretation in all circumstances. This is what Woolgar (1980) described as "the limitation of language".

Substantial numbers of the comments on usability came down to the specific wording of the questions in the context specific to the respondent. The comments highlighted some contradictions. While Respondents 1 to 4 recommended questions be simplified and shortened, Respondent 7 felt Question 19 would benefit from expansion even if it ended up being a paragraph rather than a sentence. Respondent 3 suggested, as part of the pilot phase, that three questions be amalgamated as they all referred to the comprehension of warning signals; they became Question 7. Respondent 6 saw the three parts to Question 7 as being three distinct issues and suggested that they be separated into three distinct questions. Even people from the same organisation might take different views on the wording; Respondent 3 worked for Respondent 6. It was also clear that, in all cases, the respondent had understood the question and therefore the question's phraseology was left as it was. It became clear that no wording would satisfy all respondents and all future potential users.

A number of direct comments were made on the construct of the questions and these were adopted where they were considered to be appropriate. Some examples provide illustrations of this point. Respondent 9 commented that the questions contained 'quite a bit of jargon' which made them difficult to understand. Respondent 10 pointed to Question 8 being a compound question and suggested that clarity might be assisted by separating the different concerns into clearly separate questions. Respondent 8's misinterpretation of the term "seat of understanding" demonstrated the weakness of using conceptual ideas within the question as a "hook" into the richness underlying the question: Respondent 10 just did not understand the same term and therefore did not understand the question.



The conclusion reached on usability was that no wording would satisfy everyone. The ambition was therefore for most of the questions to have meaning to most respondents. Taking into account the comments received, the questions could however still be improved.

## Utility

The issue of utility was whether the questions provided a useful prompt to thinking. Three main issues concerning utility were raised as a result of interviewing the respondents. The first was the range of divergent views amongst respondents. The second was the issue of the questions being “utopian” in design. The third and final issue was an issue about “utility for whom?”

There was considerable disagreement about utility between the respondents. This can be demonstrated in the debate over Questions 19 and 20, the summarising questions. Respondent 8 felt that the questions added no additional value as they were only repeating what had gone before. However, Respondent 11 preferred the same questions as they encapsulated all the previous issues and did not burden him with detail.

The ambition of the questions was seen, by some, to limit their utility. Respondent 13 said, ‘it is very important not to have questions that make a group of people, ... just feel that “that is just ridiculous, the scope is far beyond us’. She expressed her view that a number of the questions aimed for Utopia’, that they needed to be aimed ‘at a lower level of abstraction’ and that they needed to be aimed at a more specific issue within an organisation. Conversely Respondents 12 and 15 saw these as appropriate and provocative questions to ask.

Part of the debate on utility revolved around the question “having utility to whom?” The results demonstrated different interpretations of the questions. The first interpretation was whether the questions prompted the respondent into thinking differently. Several disagreed that the questions had prompted their thinking because they were already very aware of the issues involved. Those that disagreed with utility for this reason were then asked about the questions’ wider utility. Respondent 8 commented that while several of the questions did not have utility for her, she felt that they had wider utility. An example of the range of views held by respondents is illustrated by the summary of Questions 19 and 20. Respondents 8 and 13 thought that Question 19 ‘added nothing new’, while Respondent 11 stated that ‘these questions in particular made him think’. Respondents 9 and 12 disagreed that Question 20 had utility while Respondents 11 and 15 agreed that it had.

The conclusion reached on utility was that not all the questions could be expected to provoke new thinking in the same way. The ambition was again for most of the questions to provoke new thinking in most respondents. Respondents 6, 8 and 12 acknowledged that a number of the questions had made them “squirm”. While perceived utility of the questions was mixed, the fact that everyone found utility in some of the questions may be enough to

start a debate about risk which, according to three respondents (7, 12 and 15), does not happen enough.

## **Feasibility**

The issue of feasibility was whether the questions could be used as part of a discussion on the risks that face their organisations. The results demonstrated that, in general, they could. Four main issues were raised by respondents. The first was the political sensitivity of the issues in the questions. The second was the potentially virtuous circle between academic and practical work. The third was whether all the questions could or should be used at once (as a checklist) and finally, and closely linked, was the potential ways of employing the questions.

The feasibility of some questions was tempered by organisational politics. Respondent 6 said 'you ask some absolutely spot on questions but it is an issue of how honest can you be'. Respondent 9 expressed a concern over the sensitive nature of some of the issues. While he saw the need to ask the questions, he was concerned about the potential adverse consequences of raising these issues. Respondent 15 made the point that 'these are not inappropriate questions to ask. If you cannot ask them then this is a key warning that this is not a board I want to be on'. She went on to say 'that it is also a matter of how and when the questions are asked'.

The respondents provided illustrations of how the feasibility could be enhanced by a virtuous circle between academic work and practice. Respondent 14 confirmed that 'there was a fair degree of convergence between the issues that came up at our meetings (as the regulator they had been talking to industry about their major concerns) and those you had identified'. He also noted that the format used provided a more comprehensible structure to the questions. Respondent 12 also commented that the structure was useful; it helped her, as a practitioner, to be able to use the points that she already knew from her own experience. As an adviser to a board, she would be able to point to work done in academia which would provide credibility to what she already knew. In turn, as part of this research, what she knew from her experience strengthens this research. The fact that the very different approaches of practice and scholarship both saw certain subjects as being important, adds weight to their inclusion in the list and to the feasibility of their use.

The respondents debated the feasibility of using all the questions at once. Along with Respondents 6 and 8, Respondent 11 expressed the view that while it may be feasible to use the questions, he would not see them all being used at once. Rather they saw the questions being used as they were required. Respondents 11's concerns went further; he was concerned that the questions might be used systematically as part of the process. His concern was that they may be used "unthinkingly" and therefore would hinder rather than promote the new thinking required. A number of respondents (6, 7, 8 and 12) remarked, in one way or another, on the tendency within organisations to use questions such as these as "checklists". They warned against this approach and emphasised the need therefore for the questions to be open in

design rather than being able to be answered with a yes/no reply. They agreed that, to enhance this approach, the questions should provoke respondents to seek to provide evidence to support their views or assumptions, rather than relying on assertions.

Five respondents stated that they saw enough benefit from using the questions that they would try to apply them to their particular circumstances. Respondent 1 said that she intended to use the questions as part of her personal review of her charity's risk registers in order to identify potential gaps. She would then raise a limited number of her key concerns; she pointed out her fear that if too many issues were raised at once, this might overwhelm the capacity and will of their organisations to deal with them. Respondent 4 said that he intended to separate out the questions most appropriate to each of the people who reported directly to him and ask them to review the questions in order to try to identify if they raised any fresh concerns. Respondent 12 stated that she now intended to pass the list of questions to her executive team and then conduct a team review; she concluded by saying 'I've been really thinking about this (the way to use the questions to provoke new thinking) and our conversation was very useful indeed – indeed, the timing could not have been better!' Respondent 16 stated that he may use some of questions as “break out” sessions at the annual meeting of the organisation's top executives. Respondent 11 also said he would use them. These responses show a range of potential ways to use the questions to stimulate thinking and to resist the temptation to turn them into a process.

The conclusion reached on feasibility was that all the questions could be used under the right circumstances. As the questions do not constitute a process, respondents were left free to use the questions when they seemed appropriate. The respondents offered a range of ways this may be done, demonstrating the great flexibility in their use.

## **Future Learning**

A secondary purpose of the questions proposed by this research was to provide access (a “portal”) into the extensive body of existing knowledge on risk. The fourth issue raised with respondents was whether there was any appetite amongst practitioners to research the original academic material. For the body of existing knowledge to have practical utility, practitioners have to want to access it. With the design of this research, access was to be provided firstly by “hooks” within the questions and secondly through the notes provided as part of the background to each question. These questions raised a third issue and that is whether the appetite to investigate this material is affected by the individual's general appetite to learn. These subjects will be examined in turn.

A number of the original questions were given “hooks” to what were considered to be key pieces of literature; these hooks failed. The purpose of the hooks was to suggest key ideas in order to entice respondents to find out more about the point at issue. Respondents saw the hooks as unhelpful jargon. All these hooks have been removed from the questions and replaced by more commonly used words. In this approach, it is recognised that this still

leaves the questions open to an interpretation unintended by their author. The trade-off here is seen as being between an alternative interpretation that still leads to new thinking or an accurate term that stops the thinking process. The former was seen to be more constructive.

The material listed under the background also had a limited impact on the respondents. Some respondents became defensive about how little of the material they were aware. Three respondents commented on particular items that they would now investigate further. Overall, little interest was shown in individual pieces of research. However, surprise was shown at the amount of relevant research that had been conducted by academics. Interest was expressed in the packages of work associated with each question. With the exception of Respondent 11, who stated that he was 'not interested in the details' unless it would help him understand the context better, all the others expressed an interest in learning more about the background to a number of the questions, if not all at once, as the requirement arose. Even Respondent 11 stated that, while he was not interested in the details of the underlying work, he would only be interested when it had been refined into 'doctrine' (within AJP-01(D) (2010) doctrine is defined as 'Fundamental principles by which the military forces guide their actions in support of objectives. It is authoritative but requires judgement in application'.) Therefore the conclusion drawn is that while executives are less likely to investigate individual items of research, they are more likely to be interested in a package of research focused on each of the questions.

The results would seem to show that there is an appetite to learn; however, this may be driven more by the individual's personality and circumstances than by this particular subject matter. At one end of the spectrum was Respondent 11. At the other end of the scale was Respondent 12, who has a 'thirst for learning' and described 'how this whole exercise had made me wake up and smell the roses'; as she had never done any risk management training, she was already researching what training was available to her. She also stated that she had been 'gob-smacked by how many models there were' and while realising that she did not have the time to find out about them all, 'a few to refresh her thinking' would be useful. Respondent 8's comments represented those in the middle. She stated that "yes", she had a desire to learn more but "what" 'depends on the circumstances' prevailing at the time. Respondent 6 said that he was now 'going to Google the rubber-band theory'. Respondent 7, who sees himself as having considerable experience of, and training in, managing risk acknowledged that this research has shown him that he had much more to learn. He comments that the amount of material 'out there ... even surprises me'. Respondent 15 saw that the level of interest was likely to depend on 1) the sector and 2) the personal appetite for learning which, in her experience, was higher amongst Non-Executive Directors than executives. Therefore these results suggest that if this work were to be developed as packages of education, they might be more successfully focused at Non-Executive Directors as their primary target and executives as the secondary.

The conclusion that therefore can be drawn from this research is that there may be a limited appetite to learn about the background research that

underpins the questions. Even those with a self-declared “appetite to learn” showed little inclination to examine, what is to them, the raw material. Therefore, it might be concluded that, a valuable area for future research would be to examine how the material that exists might be taught to practitioners. It would appear that little of the general practical utility of the existing research has been realised.

The conclusion reached at this point is that, while the questions can be refined, they do have potential practical utility.

## **RESHAPING THE QUESTIONS**

Important when shaping the questions is to remember that these questions should not be seen as being definitive. No question should be seen to be privileged over another as this would have implications for whole areas of research, which is a subject outside the scope of this research. They are not designed to provide the final answer but should be seen as a catalyst to the start of a debate about risk within an organisation. As a result of discussions with respondents, a number of design parameters emerged for the questions if their practical utility was to be maximised:

- While each question has been derived from a rich source of ideas, for clarity each question should contain a single clear idea. Where compound questions are required, each part of the question should be clearly separated. (Respondent 10)
- The question should ask, or at least imply, that the evidence on which the judgement is made should be made explicit rather than those individuals involved relying on intuitive judgement. This is to ensure all underlying assumptions are aired and debated, which in turn, would enhance shared understanding within the group.
- The use of the negative question was deliberately used in order to challenge the “positive perspective” often held by senior management (this has been referred to as “optimism bias”). Respondents 10 and 12 stated that they did not like question 20 because it was phrased in the negative; when asked why, their answers were based on the fact that this was the way it was usually done. Upon reflection, Respondent 10 acknowledged that a negative question did force him to see the question in a different light.
- Respondents 10 and 13 pointed out that the questions, to them, were not always clear in the way the terms “executive” and “the board” were used. The intent of this research is to focus on those with governance responsibilities whether this is as a “unitary board” or in organisations that have distinctively separate roles such as those of the executive or as a board member. Therefore the term “board/ executive” was adopted to capture both cases.

Appendix E illustrates the final development of the questions; additions are in italics and deletions are ruled through. The final form of the questions is given in Table 25.

**Table 25 - Final Question Formulation**

<b>The Problems</b>	
1.	Where do we need to have clear and fully justifiable criteria for which events or scenarios are <b>included in</b> and <b>excluded from</b> our risk management process?
2.	While we normally monitor “ <b>outcomes</b> ” (“end”), where do we need to monitor the “ <b>processes</b> ” (“means”) that might create unacceptable outcomes?
3.	What risks are “ <b>acceptable</b> ” to us and why; how have we tested our reasoning for both core and non-core activity (against both internal and external yardsticks) to ensure that our reasoning is robust?
4.	Of those issues that we judge to be so improbable as to be “inconceivable”, which of these still have such <b>potentially serious consequences</b> (unacceptable) that we must stay alert to them?
5.	What evidence do we have that we have a shared understanding about: (1) when we will prepare an alternative plan (anticipation), (2) when we will set aside reserve capacity (resilience), (3) where we just react to situations (reactive)?
6.	How might our approach to <b>risk taking be stifling</b> our organisation?
<b>The Group</b>	
7.	Are we aware of what factors might: (1) inhibit us from <b>taking note of warning signs</b> , (2) <b>affect our perception</b> of them, (3) <b>restrain us from acting</b> upon them?
8.	a. <b>How well do we understand</b> our system’s operating modes (routine, high tempo, emergency and maintenance) and manage the transition between them? b. How well do we know those who will have to handle potential crises and are we sure they are equipped to do so?
9.	How do we judge the most <b>appropriate level</b> within our organisation for decisions to be made and whether each <b>decision maker</b> has the appropriate intuitive understanding of the issues, the organisation and its resources, and the ability to act in a timely manner?
10.	What proof is there that we are conscious of the <b>dynamics</b> and personal interactions that might cause our board and executive <b>team</b> to be <b>dysfunctional</b> (thereby generating risk) and what are we doing to ensure that we do not fall into these traps?

<b>The Process</b>	
11.	How can we be sure that we have a culture that takes every key <b>opportunity to learn</b> from unwanted events experienced within the organisation (accidents and near-misses) and from the experience of other organisations?
12.	How do we, as the board/ executive group and as an organisation, ensure that we are getting <b>the appropriate and relevant data</b> to feed into our risk discourse? How do we judge appropriate and relevant?
13.	How do we judge whether the way we <b>analyse risk</b> is appropriate to the risks we face?
14.	What might give us confidence that after an unwanted event our <b>decision-making will stand up</b> , in hindsight, to critical <b>external scrutiny</b> ?
15.	How do we ensure that all the members of the board/ executive have a <b>shared view and understanding</b> of the organisation, the way it works and its risks?
16.	What evidence can be provided that our <b>plans and policies</b> are <b>robust enough</b> to withstand a disruptive event?
17.	How might we notice where an <b>emerging gap</b> between our practice and our formal procedures becomes a potential source of risk?
18.	When would we expect our people to use their <b>experience and intuition</b> rather than adhering strictly to written plans or standards; when might this <b>cause problems</b> ? Where might our “ <b>rule-book</b> ” <b>actually hamper</b> the achievement of our organisational goals?
<b>Summarising Questions</b>	
19.	What “ <b>unwanted</b> ” occurrences (including those perceived as “ <b>inconceivable</b> ”) might affect our organisation?
20.	What evidence exists to show that our organisation’s culture, structure or processes do NOT <b>provoke errors</b> or rule violations?

Overall, the research is about knowledge transfer between the academic community and practitioners. The questions are aimed at those who are described, for the purpose of this paper, as the intuitive user (see the next section on “Level of expertise” for an explanation of this term). This person is least likely to be versed in the theoretical knowledge that underpins risk management practices. It is accepted that no single set of questions will be perfect for all contexts (an 80% fit would therefore be seen as the target).

## DISCUSSION

Before discussing the findings, it is important to remind ourselves of the context and purpose of this work. This research is set in the context of “Thinking about how to think about” risk (adapted from Wildavsky, 1988:2). Here risk is seen to be a social construction and something negative that worries us. However, a key problem is that we have ways of seeing that also mean we might not see what is in front of us. The question therefore becomes how might we see in a new way in order to appreciate what is “really” happening around us and how might this lead us to act in an appropriate way that forestalls failure? The issue becomes, how might knowledge from previous research help forestall failure and what do we learn about this previous knowledge from trying to use it? More specifically, do the questions derived from previous research have practical utility (Corley and Gioia, 2011)? This was tested using the criteria of usability, utility and feasibility derived from Platts (1993).

An important aspect of this discussion is its reflexive nature – looking at the answers through the lens of the material being considered. The research into risk has identified a number of behaviours amongst decision makers that might aggravate or mitigate potential risks. The answers provided by respondents therefore cannot be taken at face value; not only does consideration need to be given to what they were trying to say and what they were trying to avoid saying, but the answers need to be considered in the light of knowledge gained from previous research into risk. This includes such issues as denial, cognitive dissonance, management distancing and distancing by differentiation, to name but four of the issues that emerged during Project 2.

The discussion of the results comes under 12 headings:

- 1) the limitations of this research,
- 2) links to the UK Combined Code (2010),
- 3) discussions with the Regulator,
- 4) levels of expertise,
- 5) failing to ask,
- 6) knowing, but not acting,
- 7) attitude towards the questions,
- 8) desire to learn,
- 9) a coherent whole,
- 10) liability v. risk,
- 11) implications for future research, and
- 12) implications for future practice.



## Limitations

It is recognised that this research, in common with all research, has its limitations. The key limitations discussed here are firstly that the respondents were self-selecting. The second limitation is the one presented by the use of telephone interviews. The third limitation is that the understanding of the literature used is based on the reading by a single person. The final limitation is that the research is based around the UK's governance code which has implications for the generalisability of this work.

The list of respondents was self-selecting. As such the concern is that this might have biased the result of the work. As a qualitative piece of research, the intent was to access the breadth of potential views, rather than a desire to understand the types of views held as categories or the numbers of respondents that fell into each category. The results show that many of the questions had both supporters and detractors. It is therefore considered that a sufficient balance within the sample was achieved. The results showed that the questions had practical utility, yet they could still be improved. On the subject of learning, the sample provided examples of respondents who would wish to learn more and those who would not. Therefore the anticipated spectrum was captured which helps to identify both those most likely to be interested in future learning and the reason why others did not wish to learn more. Further research may now be undertaken to examine the number of board members and executives that fall into these categories and the implication for future risk governance. For two reasons the number of invitations to participate not accepted was neither a surprise nor revealing. The first reason is that research at this level within organisations is notoriously difficult to undertake. The second is that risk as a subject area does not have the same profile, and therefore interest, as matters such as finance and that it can be handled with intuitive skill possessed by those in charge of organisations. However, given the sample achieved, it does suggest that the questions have practical utility and there are a number of people operating at this level within organisations who feel that they might benefit from learning more about the literature that underpins this work. Further research would be required to quantify the constituencies that hold these views.

While the limitations of telephone interviews (Saunders et al., 2007:342) are recognised, in these circumstances (structured interviews) it was felt that the convenience and access provided by using telephone interviews outweighed the potential disadvantages. In practice, while the quality of the interaction between researcher and the respondents was easier when the interviews were held face-to-face, upon analysis this was not a key factor in the quality of the data obtained. The key factor proved to be the openness (which might be interpreted as a lack of defensiveness) of the respondent.

The understanding of the literature is limited to that of one person's reading. It is recognised that a richer understanding of the material would be gained by the use of multiple readers who then debate the number of possible interpretations. This matches the requisite variety advocated within the literature necessary to recognise unusual circumstances. While this may

appear to be an important limitation, due to the limited ambition of this work, which is inviting others to participate and comment, it is not considered to be significant in practice.

This research uses the UK's code of corporate governance, the Combined Code 2010, as its example of such a code. The UK has adopted a principle-based approach rather than a rule-based approach to corporate governance. The use of a single national code may limit, in some ways, the generalisability of these findings. This approach should not however provide any limitations in prompting how to think about thinking about risk. Also, as the UK code is principle-based, it is likely that this research will be more generalisable to other national codes that are also principle-based rather than to codes that are rule-based (such as the US's Sarbane-Oxley Act). Further research is required to examine whether the questions can be linked in the same way to alternative national codes of governance.

In summary, while the limitations of this research are recognised, they are not thought to detract from the findings.

### Link to the UK Combined Code (2010)

Respondents 8, 13, 14 and 15 raised the issue of the link between the questions presented by this research and the national code of practice for corporate governance with their reference to risk and risk management. As previously stated, for the UK this is the Combined Code (FRC, 2010a). Table 26 sets out the sections in the Combined Code in which risk is stated or implied and to which the questions may be linked [see *italics*]. This is to demonstrate where there is a direct link between the current Code and the questions provided by this research.

**Table 26 - UK Combined Code 2010**

4. In their responses to explanations, shareholders should <b>pay due regard to</b> companies' individual circumstances and bear in mind, in particular, the size and complexity of the company and <b>the nature of the risks</b> and challenges it faces.
<b>A1.</b> Every company should be headed by an effective board [ <i>or Dysfunctional?</i> – Q10] which is collectively responsible for the long-term success of the company.
<b>A3.</b> The chairman is responsible for leadership of the board and ensuring its effectiveness on all aspects of its role.  ... ensuring constructive relations between executive and non-executive directors. [ <i>Links to annual review of Chairman's performance. See A4</i> ].
<b>A4. Non-executive Directors</b> – As part of their role as members of a unitary board, non-executive directors should constructively challenge [ <i>asking all the questions the executive might wish to avoid</i> ] and help develop proposals on strategy.

Non-executive directors should scrutinise the performance of management in meeting agreed goals and objectives and monitor the reporting of performance. They should satisfy themselves on the integrity of financial information and that financial controls and systems of **risk management are robust and defensible** [Q14]. They are responsible for determining appropriate levels of remuneration of executive directors and have a prime role in appointing and, where necessary, removing executive directors [Q9 and 10], and in succession planning.

... the non-executive directors should meet without the chairman present at least annually to appraise the chairman's performance [Q9 and 10].

**B.1. The Composition of the Board** – The board and its committees should have the appropriate balance of skills, experience, independence and knowledge of the company [*seat of understanding* – Q9] to enable them to discharge their respective duties and responsibilities effectively.

The board should include an appropriate combination of executive and non-executive directors (and, in particular, independent non-executive directors) such that no individual or small group of individuals can dominate the board's decision taking. [*Preventing dysfunctional activity* – Q10].

**B.4. Development** – All directors should **receive induction** [*seat of understanding* – Q9] on joining the board and should regularly update and refresh their skills and knowledge.

The chairman should ensure that the directors continually update their skills and the knowledge and **familiarity with the company** [*seat of understanding* – Q9] required to fulfil their role both on the board and on board committees. The company should provide the necessary resources for developing and updating its directors' knowledge and capabilities.

To function effectively, all directors need **appropriate knowledge of the company** [*seat of understanding* – Q9] and access to its operations and staff.

**B.5.** – The board should be supplied in a timely manner with information in a form and of a quality appropriate to enable it to discharge its duties.

[*Appropriate and relevant data* – Q12 but the issue posed by Questions 7a, 7b, and 7c is whether those receiving the information extract from it the full implications for the organisation].

**B.6.** – The board should undertake a formal **and rigorous annual evaluation** of its own performance and that of its committees and individual directors. [*Preventing dysfunctional activity* – Q10].

**C.1. – Financial And Business Reporting** – The board should present a **balanced** [*risk is implied in this statement*] and understandable assessment of the company's position and prospects.

C.1.2. The directors should include in the annual report an explanation of the basis on which the company generates or preserves value over the longer

term (the business model) and the strategy for delivering the objectives of the company. [Q15].

**C.2. Risk Management and Internal Control** – The board is responsible for determining the **nature and extent of the significant risks** [*what is included and excluded - Q1; tight and loose Q2*] it is willing to take in achieving its strategic objectives. The board should maintain **sound risk management** [Q11; Q12; Q13; Q14; Q15; Q16; Q17; Q18] and internal control systems.

C.2.1. The board should, at least annually, conduct a review of the **effectiveness** [*Acceptable - Q3: Consequences - Q4: mitigations - Q5*] of the company's **risk management** and internal control systems and should report to shareholders that they have done so. The review should cover all material controls, including financial, operational and compliance controls.

**C.3. Audit Committee and Auditors** – The board should **establish** formal and transparent arrangements for considering **how** [*process: Q11; Q12; Q13; Q14; Q15; Q16; Q17; Q18*] they should apply the corporate reporting and **risk management** [*although this is focused on Financial risk*] and internal control principles and for maintaining an appropriate relationship with the company's auditor.

#### **D.1. – The Level and Components of Remuneration**

The remuneration committee should judge where to position their company relative to other companies. But they should use such comparisons with caution in view of the **risk** [*downside of an unwanted outcome*] of an upward ratchet of remuneration levels with no corresponding improvement in performance.

D.1.4. – The aim should be to avoid rewarding poor performance [Q10]. They should take a robust line on reducing compensation to reflect departing directors' obligations to mitigate loss.

Schedule A – Remuneration incentives should be compatible with **risk policies** [*what are the risk policies? Q3*] and systems.

**E.1. – Dialogue with Shareholders** – There should be a dialogue with shareholders based on the mutual understanding of objectives. The board as a whole has responsibility for ensuring that a satisfactory dialogue with shareholders takes place [*shared understanding – Q8*].

Questions 1, 2, 3, 4, 5, 8, 9, 10, 12, 13, 14, 15, 16, 17 and 18, can be seen to have a clear association with the Combined Code. However, this research suggests that a number of questions that emerge from the research do not have such explicit linkage to the Code. Question 6, which addresses the issue of proper balance of risk is only implied by (1) the direction to "Comply or Explain" and by (2) section C.2.1. which requires the board to review the effectiveness of the risk management process; making the connection depends on how organisations define "effective". While Section B.5. of the

Code asks about the timely provision of data, it misses the issues that lie behind Question 7. The premise behind B.5. might be interpreted to be that if the right data is provided then the appropriate decisions will result; as written it would seem to miss the issues that lie behind Question 7 and one has to be conversant with guidance provided elsewhere (FRC, 2011) in order to understand the full scope of this section. Question 7 questions the premise that provision of data is sufficient and asks the board/executive to examine any such assumption. Question 11 highlights that there is nothing in the Combined Code that requires those involved in governance to learn from their own experience or that of others. Questions 19 and 20 are not specifically addressed but are also implied by the existence of the Combined Code. While a substantial correlation can be seen between the proposed Questions and the Code (between this research proposition and practice), it is not yet perfect. Further work is needed in this area.

## **Discussion with the Regulator**

Respondent 14, as a representative of the UK Regulator (the Financial Reporting Council), found a 'fair degree of convergence' between the issues identified in his work and this research; he emphasised that 'there is a lot of correlation between the two'. He also stated that the categories under which issues were grouped by this research 'seem to work pretty well'. His views were formed as the result of conducting a series of meetings to inform the development of the Code in respect of risk management. He noted that, although he had not discussed every question with his respondents, there was 'nothing in his discussions that suggested that any question was irrelevant'. He confirmed that he saw practical utility in the research as 'this approach of producing prompts is much better than trying to prescribe processes'. He also confirmed that the work had been helpful to him in ways of rephrasing some of his questions.

Respondent 14 was also able to provide evidence that the purpose of the research offered practical utility. He confirmed that the Code looked to address more than just the financial risks to an organisation. Its focus was 'any key risk to the delivery of the strategy'. This established the link, in the organisation's collective mind, between risk and strategy. His discussions endorsed the view that the ownership of risk remains with the operational branch and that the risk function was about providing advice and challenge. In this way he saw risk being linked to performance management. Respondent 14 reported that those who contributed to his work concluded that 'the board did not spend enough time discussing risk'; this view was also expressed by Respondents 7 and 12.

Discussion with Respondent 14 established that all but two questions could be directly linked to the Combined Code. These were Questions 7 and 11. Question 11, which refers to learning, did however surface as part of his work. The issue of 'what they could learn from what others had been through' was raised. The issue of "knowledge into action" was not examined during his work; the issue is discussed further below.

The discussion with the regulatory authority did indicate that the research approach and findings were consistent with their work. The research however

was seen by them to be more systematic and structured and looked at the same issues in greater depth. These discussions proved to be important in the reshaping of the questions.

## Level of Expertise

There is a wide range of expertise amongst practitioners of risk management. Respondent 8 started a discussion about who the questions were aimed at; while both the researcher and respondent were clear that the level of analysis was the board/ executive level of the organisation, what the respondent was looking to address was whether the questions were aimed at the expert or non-expert user. Having reflected on the question, the answer developed in two parts.

The first part of the answer is that the questions are aimed at the non-risk expert; this is seen to be the executive who has had no formal training in risk management or who has not specialised in the consideration of risk. These executives rely on their general experience and knowledge to make sound judgement on matters of risk. The implication of this is that the questions must therefore be phrased using language that is designed to be clear and have no terms that have very specific meanings to some parts of the risk management community.

The second part of the answer to Respondent 8's question led to the development of a nominal scale of users. The groupings are seen to have varying degrees of training, education, experience and specialisations in matters of risk. A rudimentary scale is proposed at Table 27:

**Table 27 - Scale of Users**

Scale of Users	Description
Intuitive User	No training and uses their own general ability and experience in order to make judgements in respect of risk.
Trained or Experienced User	While they may have some general training, they have mainly learned the craft of risk management through extensive trial and error.
Subject Matter Expert (SME)	Has received some formal training, or through extensive practical experience of managing a specific risk speciality.
Multidiscipline SME	Has training and or experience of a number of recognised risk management disciplines.
Scholar/ Practitioner	Has extensive knowledge of the research and theory that underlie risk management practice and has extensive practical experience.
Academic	Has extensive knowledge of the research and theory that underlie risk management practice but has little practical know-how.

It is envisaged that, while the basic questions should have practical utility to the intuitive user, they should also provide a portal to the more detailed research that lies behind the questions. The other users, with more experience and knowledge, may use their understanding to adapt the questions to their audience, incorporating more detail. They may become aware of areas of existing knowledge with which they had not previously been made familiar; for some details see the right hand column of the original workbook (see Appendix D). The details are provided with the aim of enhancing the knowledge of those with experience or seen as being experts.

This scale is seen as being only a prototype. Research is now required in order to develop suitable categorisation of users. Consistent with the approach adopted in this paper, the purpose of these categories would be to stimulate users to ask themselves the question: “Where would I place myself: [1] an intuitive user; [2] an experienced user; [3] an SME, of which risk discipline(s); [4] Scholar? What does this tell me about my actual level of knowledge and the gaps in my knowledge and how does this correspond to my assumptions about my knowledge and practice?”

In summary, the relationship between practitioner and knowledge can be seen to be multifaceted. Therefore it is unlikely that any single framework can be optimised for all potential audiences. This research can be seen to have the ambitious goal of linking detailed research with intuitive users. The scale of this ambition has emerged during the course of the research. However, no matter what level of expertise a person has, they are still seen to need to ask the right questions, be open to the data they receive and be prepared to acknowledge the limits of their own knowledge.

## **Failure to Ask**

A key issue is the willingness or the ability of those involved in this process to ask difficult and challenging questions. The “failure to ask” was a major theme explored during Project 2; a number of responses illustrated that this was still an issue amongst these respondents. Respondent 13 said that ‘it was taken for granted that we had contingency plans’. Two respondents (9 and 16), while accepting the questions at issue, expressed the belief that their organisations “had the matter covered” rather than question whether what they did “was appropriate”. Respondent 9 suggested that, because he was in a heavily regulated industry, he relied on the regulatory process to detect irregularities. This reliance upon regulatory systems comes as a stark contrast to findings within the literature. Amongst others, Vaughan’s (1996) discussion of the Challenger Accident and Perrow’s (2007) discussion about how to reduce society’s vulnerabilities, both debated the role of regulators and found them wanting for a variety of reasons. These writers both cite political, structural and social limitations to all types of regulatory systems and point out that all the available options have their inherent weaknesses. In all these circumstances, it is the assumption that what is done is adequate but it can be seen to present an unmonitored potential source of vulnerability. But just asking can also be seen not to be enough.

## **Knowing, but Not Acting**

The key issue for any such thinking framework is whether knowing leads to action. The purpose of these questions is to prompt more detailed thinking and reflection on particular areas that may generate risk for their organisation. Any such questions need to prompt more than just an acceptance that the questions have utility. Users need to approach such issues, not with a question about whether they are addressing the particular issue, but questioning whether they are doing “what is appropriate in the circumstances”, i.e. not only are they doing enough but, given the circumstances, are they doing too much. This behaviour may be seen to be consistent with concerns expressed within the literature about the tendency of individuals to deny issues that are relevant to them or trying to “distance” themselves from the issues’ relevance. It is also a key concern of this research as expressed in the relationship between “seeing, appreciating and acting”. Respondent 6 said that ‘it is not (just) about asking the right questions, it is about how you build them into the management’s (process)’. Discussion with Respondent 14 exposed the false assumption [see Project 2], contained within the Combined Code, that data knowledge would lead to action.

Respondent 11 provides evidence that thinking differently does not necessarily lead to doing things differently. While Respondent 11 said that the questions had provoked him to think differently, and in his role as a school governor he would probably use the questions, he did not see himself using them in his core business. When asked to explain “why not”, he took some time to consider his answer and then acknowledged that there was no reason why not; this would seem to demonstrate that cultural norms and “ways of doing” are much harder to change than simply providing new ways of thinking. The issue for the future is how research may help those concerned by linking this work to other work that addresses the concerns about how to avoid issues, such as denial or distancing, when considering such questions.

## **Attitude towards the Questions**

The interviews revealed that attitude is as important as the questions. A range of attitudes were expressed when it came to examining the questions. The range included those who found reasons for not using the questions as prompts to their thinking, to those who found the exercise stimulating. Comments on attitude can be separated into two groups. The first is the attitude of the individual respondents and the second is the attitude of the groups with whom they work.

Practical utility therefore comes down to individual utility. The extremes in attitudes of the respondents can be demonstrated using comments provided by them. Respondent 16 said ‘Great questions and I enjoyed thinking about them’. Respondent 12 said ‘I’ve been really thinking about this and our conversation was very useful indeed’; she also described it as ‘a very useful and enjoyable exercise’. Respondent 7 said ‘It would be nice to devote an hour to just talk about this’; he was referring to working with his executive team. Conversely, Respondent 13 said ‘the questions existed at too high a



level of generalisation to be easy to think about'; she expressed reservations about the utility of such an abstraction exercise. Respondent 11 stated 'I did not feel hugely stimulated to read anything in the right hand column' (the detailed research); his focus was on applying distilled principles rather than exploring the subject at the level of these questions. These and other comments indicated that the attitude with which an individual approaches the questions is as important as the questions themselves.

Group dynamic and social norms are also likely to affect the practical utility of such questions. As individuals combine into groups or teams, group dynamics and social norms have an effect on the behaviour of boards and executive teams (an issue raised by Question 10). Respondent 15 clearly differentiated between boards she would take part in, where such questions are asked, rather than those either run by 'Alpha males ... who want to exert themselves' or boards composed of 'dead white males' (a caricature of where requisite variety is lacking) where the challenge of such questions would be unacceptable. The questions are therefore more likely to have practical utility for groups that welcome constructive challenge (Respondent 15). Examples of this were provided by Respondents 6 and 12 who already have plans to ask the questions within their teams in ways that suited their organisations.

No set of questions, by themselves, can transform a process, let alone a process of risk governance. The potential users of such questions have to be open minded enough to want to accept the challenge presented by any such questions. The practical utility of any such set of questions should not therefore be judged by the willingness of any population to adopt them; that is a separate question, which is not being asked by this research. That some respondents have been stimulated by the questions, shows that they have practical utility. It is accepted that this might, at present, be to a very limited population.

While consideration of the questions 'just takes a moment of thought, - a moment can be a long time and thinking is difficult' (Respondent 10, paraphrasing A.E. Housman). These questions are not primarily about what organisations do, they are about provoking discussion about what they are not doing (that they should be). Therefore, the attitude with which an individual approaches these questions is as important as the questions themselves, as is the individuals' desire to learn. An exercise such as this is therefore unlikely to be an easy one.

### **Desire to Learn**

An important consideration on whether practitioners will learn, is their desire to learn. The difference in the appetite to learning of board/ executive members was clear to see in the responses from Respondents 11 and 12. Respondent 11 stated that he had no inclination to look any deeper into the work on which the questions were based. Respondent 12 stated that she would love to spend time looking at the background material but regretted that time would not permit this; she would, however, spend time determining which areas might prove the most beneficial to study. Respondent 8 produced a more typical answer in that she saw benefit from examining each area in more detail and

saw that this should be done as the issue becomes a priority for her organisation. These answers should be seen in the light of Question 11 and suggest that those who indicated a reluctance to learn from others were missing the opportunity to benefit more cheaply than would be the case if they had their own organisational disaster. What this evidence does suggest is that an organisation's ability to learn from the work of others is likely to be limited by their attitude to learning rather than the availability of the relevant information.

## **A Coherent Whole**

The questions should not be seen as a list of unrelated items, but rather users should try to 'explain how seemingly disparate or unrelated theories fit together to form a coherent whole' (Editor AMR, 2011). Governance also requires a clear overview of the organisation and its activities. Respondent 6 stated that the questions covered a wider scope than might traditionally be considered to be risk management. Respondents 7 and 16 remarked on how the questions overlap and were interrelated; this links back to Perrow's discussion of interactive complexity with Normal Accident Theory. This complexity is difficult to represent in the linear form provided by the list format. Therefore, there is a need to develop a holistic overview. One option may be to develop the question set in the form of a strategy map (Kaplan and Norton, 2004); Calandro and Lane (2006) have discussed the integration of risk and performance in this format. Another approach may be to take a systems thinking approach such as used by Barber (2008). The illustration used at Figure 9 is based, for its greater simplicity, on the strategy map format. This format provides the opportunity to illustrate the potential interactions between the questions. At this stage, which connections are annotated is thought not to be important; what is important is that they "provoke", that they '[get] us talking, digging, comparing, refining, and focusing on the right question' (Weick, 2004). A holistic view does, however, raise some interesting anomalies.

## **Liability v. Risk**

In his discussion of Normal Accidents, Perrow (1999) expressed the view that he saw that there was sometimes a conflict between the work of lawyers, trying to limit liability, and the efforts required for effective risk management. Perrow's comments related particularly to the shipping industry; Respondent 16 expressed the view that the problem still exists in the industry today.

# "20" Questions

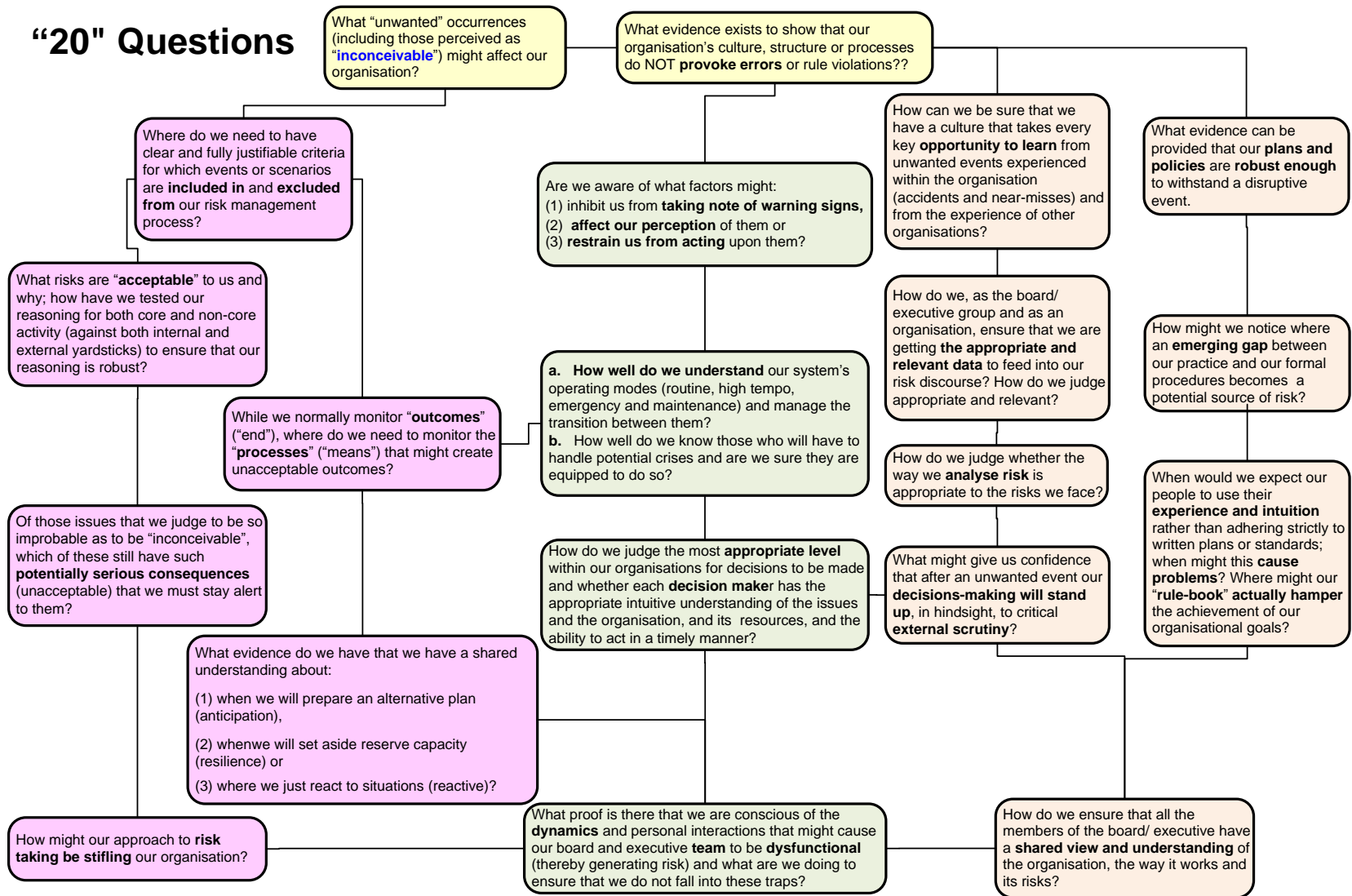


Figure 9 - Schematic of "20 Questions"

Respondent 6 also expressed concern that the legal process of discovery, for cases of litigation, provides an incentive to organisations to reduce the documentation and explicit evaluations necessary for effective risk management. Respondent 15 commented that organisations run by 'lawyers and economists', where they rely on rules, have a tendency to fall prey to the 'law of unintended consequences'. These examples, coupled with the withdrawal of one potential respondent after advice from his in-house council, suggest that this conflict may be worth a more detailed examination. Further research may therefore be required to determine the extent to which the interests of liability mitigation may militate against effective risk management. This issue also suggests that there may be serious conflicts between different components of risk management. This should, in turn, alert us to there being the potential that other unseen conflicts may exist within the overall concept of Risk Management. Research is therefore also required to determine where there may be other potential conflicts within the suite of activities referred to as risk management.

### **Implications for Future Research**

This research has a number of implications for future research. These are divided into two groups. The first set of implications is for accident/ disaster research in general and the second set is for the direction of this research.

The first set looks at two related issues: these are the transfer of knowledge into action and, the issue of hindsight versus foresight. The first, knowledge into action, is to question whether knowing is enough. This research has demonstrated that there is an assumption within some areas of research that, to understand the cause of an unwanted occurrence is tantamount to prevention. This is characterised by authors who expressed incredulity that an organisation that "knew" it had an issue did not prevent an unwanted event manifesting itself. Future research needs to be more specific about how they see new knowledge being transformed into the action necessary to prevent the unwanted occurring if their work is to avoid the label "true but useless" (Grint, 2008:14). The second issue is linked to the first and is the subject of hindsight. Authors that have examined the cause of accidents and then offer their knowledge of the cause as the solution to the next one need to examine more rigorously their employment of hindsight and foresight. While authors are well aware of these two perspectives, there is little discussion about the part each plays in the investigation of the cause, proposals for prevention and transferring that knowledge into action. Again, without this analysis, their work may attract Grint's "true but useless" label.

The second set of implications is for this area of research. The first issue is the future direction for this research, the second is potential areas of integration with other research and the third is the issue of pedagogy.

There are two potential avenues in which this research might go. The first is to conduct wider surveys of management to ascertain their attitude towards the approach proposed by this research. While this may provide statistical data for the population/ industry, it is unlikely, at this stage, to add much to what we already know. What we do know is that there will be some who have an affinity with this approach and others who will reject it. A more important piece of research therefore is to look at

whether this approach produces benefits for organisations. The path favoured would be to follow up those organisations that have expressed an interest in using this approach and see whether, in practice, they have found benefits from using it. Only once practical benefits have been proven is it likely to be worthwhile to take this work to a wider audience.

There are attractions to the integration of this work with work already done on executive behaviour such as “dark side of leadership” (Toor and Ogunlana, 2009) or executive conflict (Fink, 2000:75). The purpose of this work would be to synthesise the two fields with two aims. The first would be to identify whether “dangerous behaviours” recognised within each literature set correlate. The second would be to use the executive behaviour literature to find ways of presenting this new material to this target audience.

Also in the area of integration, this research suggest an approach that enables a way that the various disciplines related to risk management, such as (1) accident investigation, (2) crisis management, (3) business continuity management, (4) operational risk management, (5) process risk management, (6) project and programme risk management, (7) resilience engineering and (8) high reliability, to be considered in an uniform way and then integrated with fields such as performance management. This is seen to be necessary if the subject are to have practical utility for those involved in organisational governance activity. This links to the third potential area of research.

This research suggests that the detailed academic work relating to organisational disasters would appear to have had minimal penetration of this target community. This deduction leads to two potential areas of work. The first would use qualitative methods to determine the actual penetration of this knowledge and the second would, through the scholarship of teaching (pedagogy: Boyer, 1990), determine how this valuable material might be presented to practitioners more effectively.

## **Implications for Future Practice**

The practical implications of this work are, 1) its slow adoption within a limited community, 2) the benefits of constructive pessimism as an alternative social lens, and 3) it provides an alternative structure to examine organisations as a whole. I will now address these in turn.

New ideas are generally adopted very slowly by target audiences until a “critical mass” is achieved; Morgan (1997:276) uses the metaphor of the ‘hundredth monkey’ to describe this phenomenon. The metaphor describes how a single monkey adopts the practice of washing sand off potatoes before eating them. The practice was then seen to be slowly adopted by others until ‘a critical point was reached (the symbolic hundredth monkey)’. This research is proposing a new idea to practice and therefore can only initially expect the idea to reach a limited audience until the idea has proven itself. It would therefore be unrealistic to expect this approach to have an immediate, significant impact on practice. If however, the utility of this work can be established in respect of the Combined Code, the hundredth monkey might appear within a reduced timeframe. A longitudinal study would be required to monitor any such progress.

This research might be characterised as adopting an approach which I refer to as “constructive pessimism”. That is, it looks for the sources of potential harm but rather than these stifling the organisation, it posits that by identifying them and handling them appropriately, that this would enable the organisation to pursue its strategic goals more energetically. The writing on denial (such as Stark, 1961) and cognitive dissonance (Schwarz, 2005) would suggest that humans have difficulty in accepting their own weaknesses. This concern is reinforced by a number of respondents’ comments on the negative phrasing of Question 20; they did however accept that the format of the question did make them think differently. The negative question does therefore provide an alternative lens through which to examine an organisation. The format of the question design is to prompt implicit assumptions to be transformed into explicit evidence and is also designed to force new ways of thinking about issues (sometimes referred to as “Red Teaming”; see Sheffi, 2005:54). The implications of this for practice is that organisations should encourage individuals to adopt different ways of thinking in order to counter the danger of their way of seeing blinding them to what is happening around them.

The research can be seen to have practical utility as it provides practitioners with both a holistic picture (“a coherent whole”) of the existing research and access to the wider body of existing knowledge. Figure 9 provides a schematic illustrating how these issues may interact. Utilising constructive pessimism, each area starts with a red flag until there is evidence to the contrary, therefore stimulating a different way of thinking. The premise behind this approach is to keep open the possibility that every aspect of an organisation provides a potential source of risk (“an unwanted occurrence”) and only where there is clear evidence that they are under active management should their status be changed. The scorecard is supported by notes that point to the background reading required to appreciate fully the richness of the existing knowledge in each area. This research does not attempt to deliver a final format for the portal. Appendix D demonstrated one potential method of designing such a portal: further research (focused on the scholarship of pedagogy) is required to examine the most effective ways this may be done, taking into consideration the potential audiences and developments in technological means.

## **CONCLUSION**

The purpose of this research was to demonstrate to those involved in risk governance that the relevant academic work has “practical utility”. The aim of this device is to assist board members, executives and managers to break the hold of their “seeing being a way of not seeing” that might prevent them from seeing, appreciating and acting on signals of impending corporate disasters. The research provides, through the schematic at Figure 9 a “coherent whole” for a widely diverse body of literature which in turn provides a portal back into the literature.

The research has taken the phenomena identified in the relevant literatures, which had previously, during Project 2, been synthesised into 24 subject areas. These 24 subject areas have subsequently been operationalised into provocative questions appropriate to practitioners involved in a corporate governance role. The questions were finally arranged under the four main

headings of “The Problems”, “The Group”, “The Process” and “Summarising Questions”.

The research went on to establish a link between the question set and the UK code for corporate governance and could be seen to have practical utility to all the organisations that fall under the remit of this code. It is anticipated that the work would also be generalisable to those jurisdictions which have “principle-based” governance codes. This work’s applicability to jurisdictions which have “rule-based” governance codes would have to be tested by further research.

As a result of this research, the questions have been refined to ensure that 1) they were open questions, 2) they prompted the exposure of underlying assumptions and hidden evidence and 3) all jargon was removed as, where it was used, it had proved to be ineffective as “hooks”. One important consideration was that the questions make respondents think, not necessarily in the way expected by the questions’ designer.

This research also suggests that it is not only the questions that are important but also the attitude with which the individual approaches them. Engaging with these issues is likely to be challenging and as Respondent 5 highlighted, it may not be a challenge that everyone is prepared to accept. The individual’s ability to avoid denial and to ask, not only, “what are we doing” but more importantly, “what are we not doing” (which we should) is thought to be essential if that individual is going to be provoked into seeing in a new way.

Finally, this research has an important finding that reflects back on previous research. The evidence obtained by this research suggests that little of the current body of knowledge has reached, or had impact on, those at board/ executive level, even amongst those that see themselves experienced in risk management. This would suggest a failure of academics to demonstrate the relevance of their work to general practice. The research reinforces that there is a view that knowing equates to relevant action and questions whether “knowing is enough”. It suggests that while knowing may be enough to explain the cause of an incident, it is not enough where action is required to prevent a potential, unwanted occurrence. Researchers should be required to support any assertion that their construct can do more than just explain, by showing how the knowledge might be turned into effective action. That is, if their new knowledge is to have practical utility within risk management, they need to be able to show how, without the benefit of hindsight, it might be used to forestall future failures of foresight.





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## Appendix A Argument for First Person Narrative

The research will describe the development in my understanding of this subject. The research will be validated by the questions, “What greater understanding do I now have of the subject, and might this be accessible, palatable, relevant and useful to others?” The justification for this approach is threefold.

The first issue is that risk is a matter of perception (Milburn and Billings, 1976:116; Slovic, 2000); Renn (1998:49) states ‘risks are always mental representations of threats that are capable of claiming real losses’, Leiss (1992:344) talks of ‘normative structures and subjective judgment in risk assessment’. Stankiewicz, (2009:106) says that ‘in order to reduce the uncertainties and risks ... every conflicting party endeavors... find(s) strategies to reduce the hazards according to its own interests’. Holton (2004:24) states that the litmus test for exposure is “Would we care?” and Leitch (2008:30-31) also sees risk as being ‘exposed to uncertainty that we care about’. Risk assessment can therefore be seen to be indivisible from personal bias. Snook (now a professor at Harvard) has stated<sup>6</sup> that ‘I believe it is silly (and unrealistic) to suggest that anyone can be truly “objective.” We are all products of our life experiences; as a reader, I would much rather know authors’ relevant background and read their views “in light of” this information, rather than cling to some unrealistic dream that they have been unbiased’. Gigerenzer concurs with this view; when discussing the communication of risk he states (Gigerenzer, 2003:239): ‘The idea that it is possible to communicate information in a “pure” form is fiction’. It is my intention to make explicit my perspective, experience and world view alongside the technical issues.

The second issue is that no matter how intelligent and well-informed an author is, they are always limited to what they know and what they feel that they can prove (whatever form of proof they privilege). K.S. Shrader-Freschette’s 1991 book on “Risk and Rationality: Philosophical Foundations for Populist Reforms” (an example chosen at random) has been reviewed by both Mary Douglas and William Leiss. While Mary Douglas took a constructionist approach to risk (Lupton in Mythen, 2006,13), her criticism (Douglas, 1993:485) of Shrader-Freschette, however, comes across as being positivist in that it allows no leeway for the author’s interpretation of Douglas’ work on Cultural Theory. Douglas seems to attribute malice to Shrader-Freschette; she accuses the author of ‘misquotation, false note references and blatant self-contradictions’ as opposed to accepting that the author may be coming at the subject from a different perspective. Douglas uses their differences to undermine the whole of the book when she says ‘if the gross misrepresentation of cultural theory is typical, there will be other topics on which this book is misleading.’ Douglas’ defence of her position comes across as someone who has made up her mind rather than one who would be stimulated by reconsidering her thoughts in the light of other people’s ideas. By using the first person narrative I intend 1) to strive to keep an open mind to alternative perspectives on the subject of risk and 2) to keep in the reader’s mind the fact that this is my perspective that there

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<sup>6</sup> (email Snook/Lauder 21 1646 Jun 09)

may be other ways of considering the subject on which I am commenting, and that they should stay open to the perspective of others and be more willing to take on new perspectives in order to help the ideas mature.

The third issue is that the study of risk has divided into a number of schools (or clans). These clans all use their own language; they use the same terms but define them differently. This makes cross-clan communication fraught. The research will therefore have to define how it uses each term and this will be at odds with some of the audience's understanding and world view. It is therefore unlikely that any research that is trying to span Risk Management will achieve immediate consensus. As the researcher, I can only explain clearly my perspective and trust that others may find this useful.

Shrader-Freschette's book was also reviewed by William Leiss; he seems to have liked it. In his review he says (Leiss, 1992:347), 'I admire greatly the thrust of what is to me the most important of the three different books that make up Shrader-Freschette's Risk and Rationality.' However, he goes on to criticise the author for her lack of certainty in the language that she uses. Leiss (1992:346) accuses her of 'pussyfoot(ing) around' and criticises her for equivocal language. He writes: "One *might* argue": well, *does* one so argue or not?'

Every author is faced by the issue of what to include and what to exclude, about which arguments need to be developed, and to which one only needs to allude. Every author will face criticisms from referees, reviewers and readers for the judgements they have made. As any subject develops, new facts, concepts and arguments will emerge. Therefore few papers are likely to be seen as definitive and so, once again, articles written in the third person provide an illusion of certainty that is rarely warranted. By writing in the first person, the author reminds the reader that the discussion is bounded by the author's current knowledge, experience and world view.

Therefore, consistent with a number of articles already published in 4 star academic journals, it is considered that the most likely way for the research to achieve credibility is for the approach and the method to be clear and accessible for 'In an uncertain world, certainty can be a dangerous ideal' (Gigerenzer, 2003:90). Knowing that it may not be possible to achieve consensus, it is felt that the best route would be to describe the journey of development and invite others to see why the chosen route was taken and to decide, for themselves, whether they find the work useful in their understanding of the subject.

## Appendix B Morphing of Questions

	Project 2 Outcome	Version 1	Final
<b>Problem</b>			
1.	To be clear about their rules for inclusion and exclusion of subject area and the risk associated with their delineation.	Are our rules for which issues (scenarios) are included in and excluded from the risk register clear and fully justifiable?	Where do we need to have clear and fully justifiable criteria for which events or scenarios are <b>included in</b> and <b>excluded from</b> our risk management process?
2.	Is the action required about process or outcome and, is the jeopardy associated with each clear.	Are we clear about whether our key risks are related to our processes or our outcomes and, is the jeopardy associated with each clear?	While we normally monitor <b>“outcomes”</b> (“end”), where do we need to monitor the <b>processes</b> (“means”) that might create unacceptable outcomes?
3.	To establish what risk are “acceptable” to them and why and then test their reasoning to ensure that it is robust and not a “fantasy”.	What risks are “acceptable” to us and why; how have we tested our reasoning (against both internal and external yardsticks) to ensure that our reasoning is robust?	What risks are <b>“acceptable”</b> to us and why; how have we tested our reasoning for both core and non-core activity (against both internal and external yardsticks) to ensure that our reasoning is robust?
4.	Of those issues that are labelled so improbable as to be “inconceivable”, which still have such potentially serious consequences (the unacceptable) that we must stay mindful of them?	Of those issues that we label as, so improbable as to be “inconceivable”, which still have such potentially serious consequences (unacceptable) that we must stay alert to them?	Of those issues that we judge to be, so improbable as to be “inconceivable”, which of these still have such <b>potentially serious consequences</b> (unacceptable) that we must stay alert to them?
5.	Define the groups understanding of the terms “anticipation” and “resilience”. Define whether the action needed is create a “plan B” or to generate buffer capacity).	Are we clear about in what circumstances (1) we will prepare an alternative plan (anticipation), (2) we will set aside reserve capacity (resilience) or (3) where we just react to situations (reactive)?	What evidence do we have that we have a shared understanding about when:  (1) we will prepare an alternative plan (anticipation),  (2) we will set aside reserve capacity (resilience) or  (3) where we just react to situations (reactive)?

	Project 2 Outcome	Version 1	Final
6.		What are the risks to our organisation and society from being too cautious?	How might our approach to risk taking be stifling our organisations?
<b>The Group</b>			
7.	<p>To discuss which factors might be acting on and affecting the perception that contribute to how they appreciate the signals available to them.</p> <p>To make themselves aware of the personal and organisational filters that might inhibit their seeing warning available to them.</p> <p>To question whether the messenger (source of any data) is having an effect on how the data is viewed and, if so, whether this can be judged to be “rational” and there “valid”.</p> <p>To be aware of the factors affecting the potential for inaction of themselves as individuals and of the group overall and what mechanisms they may put in place to guard against this issue.</p> <p>To question for the executive is therefore to judge whether they have enough relevant detail to enable them to appreciate the complexity of the mechanisms acting at the time.</p>	<p>Are we aware of the personal and organisational filters that might inhibit us from seeing available warning signs?</p> <p>How well do we understand the factors that might affect our perception of the “signals” available to us?</p> <p>Are our views on the validity of the available data prejudiced by our views on the source of the data and, if so, can our views be justified?</p>	<p>Are we aware of what factors that might:</p> <p>(1) inhibit us from <b>taking note of warning signs,</b></p> <p>(2) those that might <b>affect our perception</b> of them or</p> <p>(3) those that might <b>restrain us from acting</b> upon them?</p>
8.	To question how well they understand their system, who will have to handle potential crisis and whether they are mentally equipped to do so.	How well do we understand: our system, those who will have to handle potential crises and whether they are mentally equipped to do so?	<p><b>a. How well do we understand</b> our system’s operating modes (routine, high tempo, emergency and maintenance) &amp; manage the transition between them?</p> <p><b>b. How well do we know</b> those who will have to handle potential crises and are we sure they are equipped to do so?</p>

	Project 2 Outcome	Version 1	Final
9.	To judge the most appropriate level within their organisations for decision to fall given the need for the appropriate seat of understanding, resource power and to need to act in a timely manner.	How do we judge the most appropriate level within our organisations for decisions to be made and that each decision maker has the appropriate “seat of understanding”, resource power and the ability to act in a timely manner? Are we familiar with the phenomena which may cause our inaction as individuals and as a group and what are we doing about them?	How do we judge the most <b>appropriate level</b> within our organisations for decisions to be made and whether each <b>decision maker</b> has the appropriate intuitive understanding of the issues and the organisation, resources and the ability to act in a timely manner?
10.	To debate whether their groups is taking any steps to guard against the threats created by group dynamics.	Are we familiar with the forms of dynamics that might cause our group to be dysfunctional and what are we doing to counter them?	What proof is there that we conscious of the <b>dynamics</b> and person interactions that might cause our board and executive <b>team</b> to be <b>dysfunctional</b> (thereby generating risk) and what are we doing to ensure that we do not fall into these traps?
<b>The Process</b>			
11.	To question whether they are seeing all the lesson that are available to them and whether they understand, and therefore take into account, factor than might be working against them in this regard.	From what lessons do we look to learn and what have we learnt that might prevent the unwanted from happening?	How can we be sure that we have a culture that take every key <b>opportunity to learn</b> from unwanted events experienced within the organisation (accidents and near-misses) and from the experience of other organisations?
12.	To be aware of the incoming data and need to be able to assess it against signals types in order to understand it relevance (both positive or negative) and be able to justify its inclusion or exclusion from the debate.	Are we aware of what data is available, do we understand it relevance (both positive or negative) and are we able to justify its inclusion or exclusion from the debate?	How do we, as the board/executive group and as an organisation, ensure that we are getting <b>the appropriate and relevant data</b> to feed into our risk discourse? How do we judge appropriate and relevant?
	To question whether the right information is getting to the right people within the right timeframe and how they would know if it was not before it was too late.	How do we be sure that the right information is getting to the right people within the right timeframe?	
13.	To discuss what method of analysis would be most appropriate to the problem	How do we judge whether our methods of analysis (both formal and informal)	How do we judge whether the way we <b>analyse risk</b>

	Project 2 Outcome	Version 1	Final
	at hand and whether a formal system of analysis may 'to reduce the effect of personal bias.	are appropriate to the problems at hand?	appropriate to the risks we face?
14.	To debate whether the criteria being used for making decisions may not be viewed by others, at some later stage, to be amoral.	Might the criteria that we use for making decisions be viewed by others, at some later stage (post-accident), as amoral?	What might give us confidence that after an unwanted event our <b>decisions-making will stand up</b> , in hindsight, to critical <b>external scrutiny</b> ?
15.		Does the board use any formal organisation model during their deliberations? If members only use their own individual mental models, how do the group ensure that it is working to a common model?	How do we ensure that all the members of the board/executive have a <b>shared view &amp; understanding</b> of the organisation, the way it works and its risk?
16.	To assess whether their plans and policies, which are a product of their bureaucratic process, are likely to withstand 'an abrupt and brutal audit'.	What evidence can be provided that our plans and policies are robust enough to withstand an accident ("a brutal audit").	What evidence can be provided that our <b>plans and policies are robust enough</b> to withstand a disruptive event.
17.	How to recognise "drift" as it occurs.	How might our organisation recognise the dysfunctional decoupling of practice from formalised procedures or policy ("drift") as it occurs	How might we notice where an <b>emerging gap</b> between our practice and our formal procedures becomes a potential-source of risk?
18.	To debate the appropriate use of the five mechanisms of action and coordination (standards, plans, mutual adjustment, rules and experience) and how to enhance each and safeguard the organisations against the weakness of each.	When would we expect our people to use their experience and initiative rather than adhering strictly to written plans or standards? When might this cause problems?	When would we expect our people to use their <b>experience and initiative</b> rather than adhering strictly to written plans or standards; when might this <b>cause problems</b> ? Where might our " <b>rule-book</b> " <b>actually hamper</b> the achievement of our organisational goals?
	To be aware of the strength and limitation of rule-based and knowledge-based approaches and be clear when each should be applied within their organisation.	Where might our "rule-book" hamper the achievement of our organisational goals?	



	Project 2 Outcome	Version 1	Final
<b>Summarising Questions</b>			
19.	What might occur (including the inconceivable): (1) what might cause it, (2) how might we prevent it, (3) is the necessary process in place, (4) are our people effectively trained, (5) do they have the necessary resources, (6) will they recognise the problem should it arise, (7) will they see the right action to take, (8) will they implement the necessary action appropriately, and (9) will we get the same answers if we ask these questions tomorrow?	What “unwanted” occurrences (including those perceived as “inconceivable”) might effect the organisation?	What “unwanted” occurrences (including those perceived as “inconceivable”) might affect our organisation?
20.	To question whether there is clear evidence that they do not fall into the category of an “error-inducing” organisation.	What evidence is there that we are not an “error-inducing” organisation?.	What evidence exists to show that our organisation’s culture, structure or processes do <b>NOT provoking errors</b> or rule violations?



## Appendix C Stage 2 Question Development

	Version 1	Version 2	Version 3	Version 4	Version 5
<b>Problem</b>					
1.	Are our rules for which issues (scenarios) are included in and excluded from the risk register clear and fully justifiable?	Are our rules for which issues (scenarios) are included in and excluded from the risk register clear and fully justifiable?	Are our rules for which issues (scenarios) are included in and excluded from the risk register clear and fully justifiable?	Do we have clear and fully justifiable rules for which scenarios are <b>included in</b> and <b>excluded from</b> our risk management process?	Do we have clear and fully justifiable rules for which scenarios are <b>included in</b> and <b>excluded from</b> our risk management process?
2.	Are we clear about whether our key risks are related to our processes or our outcomes and, is the jeopardy associated with each clear?	Are we clear about whether our key risks are related to our processes or our outcomes and, is the jeopardy associated with each clear?	Are we clear about whether our key risks are related to our processes or our outcomes and, is the jeopardy associated with each clear?	While we normally monitor <b>“outcomes”</b> , where do we need to monitor the <b>processes</b> that might create unacceptable outcomes?	While we normally monitor <b>“outcomes”</b> , where do we need to monitor the <b>processes</b> that might create unacceptable outcomes?
3.	What risks are “acceptable” to us and why; how have we tested our reasoning (against both internal and external yardsticks) to ensure that our reasoning is robust?	What risks are “acceptable” to us and why; how have we tested our reasoning (against both internal and external yardsticks) to ensure that our reasoning is robust?	What risks are “acceptable” to us and why; how have we tested our reasoning (against both internal and external yardsticks) to ensure that our reasoning is robust?	What risks are <b>“acceptable”</b> to us and why; how have we tested our reasoning (against both internal and external yardsticks) to ensure that our reasoning is robust?	What risks are <b>“acceptable”</b> to us and why; how have we tested our reasoning (against both internal and external yardsticks) to ensure that our reasoning is robust?
4.	Of those issues that we label as, so improbable as to be “inconceivable”, which still have such potentially serious consequences (unacceptable) that we must stay alert to them?	Of those issues that we label as, so improbable as to be “inconceivable”, which still have such potentially serious consequences (unacceptable) that we must stay alert to them?	Of those issues that we label as, so improbable as to be “inconceivable”, which still have such potentially serious consequences (unacceptable) that we must stay alert to them?	Of those issues that we judge to be, so improbable as to be “inconceivable”, which of these still have such <b>potentially serious consequences</b> (unacceptable) that we must stay alert to them?	Of those issues that we judge to be, so improbable as to be “inconceivable”, which of these still have such <b>potentially serious consequences</b> (unacceptable) that we must stay alert to them?

	Version 1	Version 2	Version 3	Version 4	Version 5
5.	Are we clear about in what circumstances (1) we will prepare an alternative plan (anticipation), (2) we will set aside reserve capacity (resilience) or (3) where we just react to situations (reactive)?	Are we clear about in what circumstances (1) we will prepare an alternative plan (anticipation), (2) we will set aside reserve capacity (resilience) or (3) where we just react to situations (reactive)?	Are we clear about in what circumstances (1) we will prepare an alternative plan (anticipation), (2) we will set aside reserve capacity (resilience) or (3) where we just react to situations (reactive)?	Do we agree about in what circumstances (1) we will prepare an alternative plan ( <b>anticipation</b> ), (2) we will set aside reserve capacity ( <b>resilience</b> ) or (3) where we just react to situations ( <b>reactive</b> )?	Do we agree about in what circumstances (1) we will prepare an alternative plan ( <b>anticipation</b> ), (2) we will set aside reserve capacity ( <b>resilience</b> ) or (3) where we just react to situations ( <b>reactive</b> )?
6.	What are the risks to our organisation and society from being too cautious?	What are the risks to our organisation and society from being too cautious?	What are the risks to our organisation and society from being too cautious?	How might our approach to <b>risk taking be stifling</b> our organisations?	How might our approach to <b>risk taking be stifling</b> our organisations?
<b>The Group</b>					
7.	Are we aware of the personal and organisational filters that might inhibit us from seeing available warning signs?	Are we aware of the personal and organisational filters that might inhibit us from seeing available warning signs?	Are we aware of the personal and organisational filters that might inhibit us from seeing available warning signs?	Are we aware of what factors that might (1) inhibit us from <b>taking note of warning signs</b> , (2) those that might <b>affect our perception</b> of them or (3) those that might <b>restrain us from acting</b> upon them?	Are we aware of factors that might (1) inhibit us from <b>taking note of warning signs</b> , (2) those that might <b>affect our perception</b> of them or (3) those that might <b>restrain us from acting</b> upon them?
	How well do we understand the factors that might affect our perception of the "signals" available to us?	How well do we understand the factors that might affect our perception of the warning signs available to us?	How well do we understand the factors that might affect our perception of the warning signs available to us?		
	Are our views on the validity of the available data prejudiced by our views on the source of the data and, if so, can our views be justified?	Are we aware how our willingness to listen to warnings may be affected by our views on the source of the information?	Are we aware how our willingness to listen to warnings may be affected by our views on the source of the information?		

	Version 1	Version 2	Version 3	Version 4	Version 5
8.	How well do we understand our system, those who will have to handle potential crises and whether they are mentally equipped to do so?	How well do we understand our system's operating modes; how well do we know those who will have to handle potential crises and are we sure they are mentally equipped to do so?	How well do we understand our system's operating modes; how well do we know those who will have to handle potential crises and are we sure they are mentally equipped to do so?	<b>How well do we understand</b> our system's operating modes; how well do we know those who will have to handle potential crises and are we sure they are equipped to do so?	<b>How well do we understand</b> our system's operating modes; how well do we know those who will have to handle potential crises and are we sure they are equipped to do so?
9.	How do we judge the most appropriate level within our organisations for decisions to be made and that each decision maker has the appropriate "seat of understanding", resource power and the ability to act in a timely manner?  Are we familiar with the phenomena which may cause our inaction as individuals and as a group and what are we doing about them?	How do we judge the most appropriate level within our organisations for decisions to be made and that each decision maker has the appropriate "seat of understanding", resources and the ability to act in a timely manner?  Are we aware of the psychological factors that may restrain us from acting as individuals and as a group and what are we doing about them?	How do we judge the most appropriate level within our organisations for decisions to be made and that each decision maker has the appropriate "seat of understanding", resources and the ability to act in a timely manner?  Are we aware of the psychological factors that may restrain us from acting as individuals and as a group and what are we doing about them?	How do we judge the most <b>appropriate level</b> within our organisations for decisions to be made and that each <b>decision maker</b> has the appropriate " <b>seat of understanding</b> ", resources and the ability to act in a timely manner?	How do we judge the most <b>appropriate level</b> within our organisations for decisions to be made and that each <b>decision maker</b> has the appropriate " <b>seat of understanding</b> ", resources and the ability to act in a timely manner?
10.	Are we familiar with the forms of dynamics that might cause our group to be dysfunctional and what are we doing to counter them?	Are we familiar with the dynamics that might cause our group to be dysfunctional and what are we doing to counter them?	Are we familiar with the dynamics that might cause our group to be dysfunctional and what are we doing to counter them?	Are we familiar with the <b>dynamics</b> and person interactions that might cause our executive <b>team</b> to be <b>dysfunctional</b> (thereby generating risk) and what are we doing to ensure that we do not fall into these traps?	Are we familiar with the <b>dynamics</b> and personal interactions that might cause our executive <b>team</b> to be <b>dysfunctional</b> (thereby generating risk) and what are we doing to ensure that we do not fall into these traps?

	Version 1	Version 2	Version 3	Version 4	Version 5
<b>The Process</b>					
11.	From what lessons do we look to learn and what have we learnt that might prevent the unwanted from happening?	From where do we seek our lessons and what have we learnt that might prevent the unwanted from happening to us?	From where do we seek our lessons and what have we learnt that might prevent the unwanted from happening to us?	Can we show that we have a culture that take every key <b>opportunity to learn</b> from unwanted events?	Can we show that we have a culture that takes every available <b>opportunity to learn</b> from unwanted events?
12.	Are we aware of what data is available, do we understand it relevance (both positive or negative) and are we able to justify its inclusion or exclusion from the debate?	Are we aware of what data is available, do we understand its relevance (both positive or negative) and are we able to justify its inclusion or exclusion from our risk discourse?	Are we aware of what data is available, do we understand its relevance (both positive or negative) and are we able to justify its inclusion or exclusion from our risk discourse?	How do we, as an executive group and as an organisation, ensure that we are getting <b>the appropriate and relevant data</b> to feed into our risk discourse? How do we judge appropriate and relevant?	How do we, as an executive group and as an organisation, ensure that we are getting <b>the appropriate and relevant data</b> to feed into our risk discourse? How do we judge “appropriate” and “relevant”?
	How do we be sure that the right information is getting to the right people within the right timeframe?	How can we be sure that the right information is getting to the right people within the right timeframe?	How can we be sure that the right information is getting to the right people within the right timeframe?		
13.	How do we judge whether our methods of analysis (both formal and informal) are appropriate to the problems at hand?	How do we judge whether our methods of analysis (both formal and informal) are appropriate to the problems at hand?	How do we judge whether our methods of analysis (both formal and informal) are appropriate to the problems at hand?	How do we judge whether our <b>methods of risk analysis</b> are appropriate to the risks faced?	How do we judge whether our <b>methods of risk analysis</b> are appropriate to the risks faced?
14.	Might the criteria that we use for making decisions be viewed by others, at some later stage (post-accident), as amoral?	Might the criteria that we use for making decisions be viewed by others, at some later stage (post-accident), as amoral?	Might the criteria that we use for making decisions be viewed by others, at some later stage (post-accident), as amoral?	After an unwanted event will our <b>decisions-making stand up</b> , in hindsight, to critical <b>external scrutiny</b> ?	After an unwanted event will our <b>decision-making stand up</b> , in hindsight, to critical <b>external scrutiny</b> ?
15.	Does the board use any formal organisation model during their deliberations?	Does the board use any formal model during their deliberations, in order to understand the interactive	Does the board use any formal model during their deliberations, in order to understand the interactive	How do we ensure that all the members of the executive have a <b>shared view &amp; understanding</b> of the organisation, the way it	How do we ensure that all the members of the executive have a <b>shared</b>

	Version 1	Version 2	Version 3	Version 4	Version 5
	If members only use their own individual mental models, how do the group ensure that it is working to a common model?	complexity of the organisation?  If members only use their own individual mental models, how does the group ensure that it is working to a common model?	complexity of the organisation?  If members only use their own individual mental models, how does the group ensure that it is working to a common model?	works and its risk?	<b>view &amp; understanding</b> of the organisation, the way it works and its risk?
16.	What evidence can be provided that our plans and policies are robust enough to withstand an accident (“a brutal audit”).	What evidence can be provided that our plans and policies are robust enough to withstand an accident (“a brutal audit”).	What evidence can be provided that our plans and policies are robust enough to withstand an accident (“a brutal audit”).	What evidence can be provided that our plans and policies are robust enough to withstand an accident (“a brutal audit”).	What evidence can be provided that our plans and policies are robust enough to withstand an unwanted event (“a brutal audit”).
17.	How might our organisation recognise the dysfunctional decoupling of practice from formalised procedures or policy (“drift”) as it occurs	How might we notice where an emerging gap between our practice and our formal procedures becomes potentially dysfunctional (“drift”)?	How might we notice where an emerging gap between our practice and our formal procedures becomes potentially dysfunctional (“drift”)?	How might we notice where an emerging gap between our practice and our formal procedures becomes potentially dysfunctional (“drift”)?	How might we notice where an emerging gap between our practice and our formal procedures becomes potentially dysfunctional (“drift”)?
18.	When would we expect our people to use their experience and initiative rather than adhering strictly to written plans or standards?  When might this cause problems?	When would we expect our people to use their experience and initiative rather than adhering strictly to written plans or standards?  When might this cause problems?	When would we expect our people to use their experience and initiative rather than adhering strictly to written plans or standards?  When might this cause problems?	When would we expect our people to use their <b>experience and initiative</b> rather than adhering strictly to written plans or standards; when might this <b>cause problems</b> ? Where might our “ <b>rule-book</b> ” <b>actually hamper</b> the achievement of our organisational goals?	When would we expect our people to use their <b>experience and initiative</b> rather than adhering strictly to written plans or standards; when might this <b>cause problems</b> ? Where might our “ <b>rule-book</b> ” <b>actually hamper</b> the achievement of our

	Version 1	Version 2	Version 3	Version 4	Version 5
	Where might our “rule-book” hamper the achievement of our organisational goals?	Where might our “rule-book” hamper the achievement of our organisational goals?	Where might our “rule-book” hamper the achievement of our organisational goals?		organisational goals?
<b>Summarising Questions</b>					
19.	What “unwanted” occurrences (including those perceived as “inconceivable”) might effect the organisation?	What “unwanted” occurrences (including those perceived as “inconceivable”) might affect our organisation?	What “unwanted” occurrences (including those perceived as “inconceivable”) might affect our organisation?	What “unwanted” occurrences (including those perceived as “inconceivable”) might effect our organisation?	What “unwanted” occurrences (including those perceived as “inconceivable”) might affect our organisation?
20.	What evidence is there that we are not an “error-inducing” organisation?.	What evidence is there that we are not an “error-inducing” organisation?	What evidence exists to show we are NOT an “error-inducing” organisation?	What evidence exists to show that our organisation’s culture, structure or processes do NOT <b>provoking errors</b> or rule violations?	What evidence exists to show that our organisation’s culture, structure or processes do NOT <b>provoke errors</b> or rule violations?



## **Appendix D “Workbook 5”**

### **Introduction**

I am conducting research into a phenomenon referred to as “failure of foresight” and considering how it might be forestalled. Failure of foresight is cited when corporate executives are blamed for failing to see and then act upon warnings of impending corporate “disasters”, thereby becoming responsible for letting them happen. The UK Corporate Governance Code (2010), a benchmark of best practice, requires that ‘The board should establish formal and transparent arrangements for considering how they should apply ... risk management’; it emphasises that the risk management system should be “robust and defensible”. The purpose of the questions developed by this research is to provide assistance to a board’s deliberations as to ‘the nature and extent of the significant risks it is willing to take in achieving its strategic objectives’.

The questions presented have been distilled from a review of the academic literature related to accident, crisis and risk management. The questions are derived from research into the causes of disasters and other unwanted events. The research has highlighted the failures that have been seen to contribute to these events. My proposition is that awareness amongst executives of these factors may help to forestall future failure within their organisations. The questions posed are seen to provide an alternative to the more traditional “bottom-up” approach to the risk management/ governance process.

The purpose of this research is to examine which concepts and theories developed within the academic literature are seen by practitioners to be usable and useful and whether, as practitioners, they see any benefit from engaging with the research that underlies the questions.

It should be noted that all responses will be anonymised and that, as volunteers, you are free to withdraw at anytime. The only references to you personally will be by general detail, e.g. your gender, years of experience, business/ professional qualifications, personal specialisation, and operating sector.

### **Setting**

The setting for this work is the governance of risk, performed at the business unit or corporate board level. The aim of the questions is to assist board members in performing their function as an “investigator”; to ask the penetrating questions of their supporting staff. Therefore the setting in which the following questions should be answered is in the context of a review of your risk management/ governance process. However, no details of organisation or internal deliberations are required to be disclosed.

Within this document, due to the ambiguous nature of the word “risk”, the idea has been replaced by the term “unwanted”. The term “unwanted” should be considered as any circumstance or phenomenon that may precipitate “the potential nightmares” that stalk all organisations. The term covers:

- The non-delivery of an intended organisational output.

- Barriers to delivery.
- Unwanted inputs.
- Unexpected interactions.
- Unwanted outputs.
- Unintended consequences.
- The unknown/uncertain.

There are 20 questions divided into 4 blocks:

- **Problem:** this section contains 6 questions that relate to the nature of unwanted problems.
- **Group:** this section contains 4 questions that relate to the interaction of the board, as a group, that may increase the organisation's vulnerability to unwanted occurrences.
- **The Process:** this section contains 8 questions that relate to aspects of the organisation's process that may precipitate the unwanted.
- **General Questions:** this section contains 2 overarching questions in order to set the more detailed questions into a wider context.

Some background to the question is provided. This states the aim of each question and a selection of the work from which it was derived; key concepts from the literature are in bold text.

## Action

You are asked:

1. To consider the questions in the context of a review of your organisation's risk management process rather than looking at the questions in isolation to practice. No reference to your organisation is required. The issue is whether the questions asked are usable, useful and could feasibly be used as part of senior leadership discussions. In addition to your answers to the more formal questions, I am interested in your reaction to the questions and how you think your colleagues might perceive them.
2. To each of the 20 questions, please answer with either "I agree" or "I disagree" to each of the following 4 queries:
  - **Usability** (I understood the question at face value).
  - **Utility** (the question provided a useful prompt to my thinking).
  - **Feasibility** (I could use the question as part of a risk-based discussion).
  - I see benefit from learning more on the issues that underlie the question.
3. To "strike through" the unwanted "I agree" or "I disagree" option on the answer sheet on page 10 in order to record your answer.
4. To provide additional explanation where you disagree, using the sheets on pages 11-12.

5. To add additional comments as you see fit. Please put these comments, opposite the relevant question, in the space provided on pages 11-12. You might also consider the “Squirm test”; this is that visceral feeling you get when you read a question. Was it because:
  - “We should have thought of this issue before”.
  - “We should do this but how?” (“It is just too difficult.”)
  - “We should do this, but I am afraid of the answer that we will get”.
6. You are also requested to provide a personal profile containing; Male/Female, years of experience, business/ professional qualifications, personal specialisation, and operating sector. [This is required in order to compare responses as part of the analysis process.]
7. Once you have had time to consider your response, we need to meet to discuss your response. This may be done face to face, over the internet (for example using Skype) or over the phone. To ensure that I record your comments accurately, I ask that I can tape the session; at the end of the meeting, I would also ask for a copy of sheets on which you have recorded your views.
8. If you wish, I will provide you with a copy of the report once it has been validated by my scrutiny panel.

**Thank you for your time and contribution.**



## Forestalling Failure of Foresight: Question Workbook

	Questions	Background
<b>Problem</b>		
1.	Do we have clear and fully justifiable rules for which scenarios are <b>included in</b> and <b>excluded from</b> our risk management process?	<p>The aim of this question is to examine why problems or other possible unwanted events are included or excluded from an organisation's risk management discourse. It is designed to stimulate discussion as to what unwanted events might arise and whether they might be initiated by errors, violations, unforeseen interaction or by act of commission or omission.</p> <p>The question is based on the following academic work:</p> <ul style="list-style-type: none"> <li>• <b>“Design-Base Accidents”</b> (DBA) and <b>“Beyond DBA”</b> (BDBA) criteria designed to established which issues have been identified in the design stage and been taken into account</li> <li>• The <b>“Seven Dimensions of Risk”</b> and <b>“Lines, Circles and Dots”</b> frameworks designed to facilitate risk discourse</li> <li>• The need for <b>“Sensitivity to Operations”</b> and <b>“Preoccupation with Failure”</b> coming from the debate about high reliability organisations</li> <li>• Whether the organisation is prudent to simply <b>“Focus on Core”</b> operations or whether this strategy might also have hidden dangers.</li> </ul>
2.	While we normally monitor <b>“outcomes”</b> , where do we need to monitor the <b>processes</b> that might create unacceptable outcomes?	<p>The aim of the question is to provoke questions about which processes or their management need to be monitored by the executive because the inherent dangers are too great to be allowed to manifest themselves.</p> <p>The question is based on research that has identified that there is a point within organisations where the management role changes from dealing with <b>“Routine to the Novel”</b>; from the <b>“Specifics to Principles”</b>; from the <b>“Full Detail to managing by Exception”</b>. This changes the individual from <b>“Expert to Investigator”</b>. Also relevant is the idea of <b>Management Distancing</b>. The research shows that, at this level, managers or executives tend to manage by exception based on outcomes and that this has inherent dangers</p>
3.	What risks are <b>“acceptable”</b> to us and why; how have we tested our reasoning (against both internal and external yardsticks) to ensure that our reasoning is	<p>The aim of the question is to provoke discussion about what risks are acceptable to the organisation and why the criteria used is justifiable. The question starts the process of turning vague tacit values into explicit, actionable and auditable ones. Alternatively it will start the process of exposing</p>

	<b>Questions</b>	<b>Background</b>
	robust?	<p>those issues that might be “taboo” to the organisation.</p> <p>The question is based on research that examines how organisations establish which risks are deemed to be “<b>acceptable</b>”,</p> <ul style="list-style-type: none"> <li>• The <b>Substitution Test</b></li> <li>• <b>Boundaries of acceptability</b></li> <li>• How might the context (Pre-event/ Post-event) affect what might be deemed to be acceptable</li> <li>• How to balance concepts of “<b>Inevitable</b>” and bad luck with good fortune as in the “<b>Union Carbide factor</b>”</li> </ul>
4.	<p>Of those issues that we judge to be, so improbable as to be “inconceivable”, which of these still have such <b>potentially serious consequences</b> (unacceptable) that we must stay alert to them?</p>	<p>The aim of the question is to keep alive in the debate those issues that organisations think they have under control but, should they occur, are likely to have such serious consequences that the executive might wished to have remained alert to them.</p> <p>The question is based on research into</p> <ul style="list-style-type: none"> <li>• <b>The impossible accident</b></li> <li>• <b>Black Swans</b></li> <li>• <b>The worst case</b></li> </ul>
5.	<p>Do we agree about in what circumstances (1) we will prepare an alternative plan (<b>anticipation</b>), (2) we will set aside reserve capacity (<b>resilience</b>) or (3) where we just react to situations (<b>reactive</b>)?</p>	<p>The aim of the question is to prompt those engaged in the debate to clarify the terms they are using and then to move on to establishing criteria by which they decide their risk mitigation strategies.</p> <p>The question is based on research that:</p> <ul style="list-style-type: none"> <li>• Outlines strategy options such as: Remove the source of the issue, mitigate the effect , cease the activity that creates potential jeopardy or try to transfer the risk to someone else.</li> <li>• Strategies related to Simple issues, complex issues, for uncertainty and for ambiguous issues</li> <li>• Options for safety</li> <li>• Defining barrier types</li> <li>• The <b>Swiss Cheese Model</b></li> <li>• Capacity (“limited resources”) to cope can be stretched and thereby limited; see the <b>Rubber-band Model</b>.</li> </ul> <p>Research also shows that there is little consistency in the use of relevant terms such as:</p> <ul style="list-style-type: none"> <li>• <b>Security</b></li> <li>• <b>Reliability/ “Dynamic non-event”</b></li> <li>• <b>Redundancy</b> (either Serial or Parallel / “<b>Reciprocity</b>)</li> <li>• <b>Resilience</b></li> <li>• <b>Robustness</b></li> </ul>

	Questions	Background
		<ul style="list-style-type: none"> <li>• <b>Bricolage</b> Research also warns that the use of redundancy has its own downsides described as <b>Fallacy of Redundancy</b> and other such phenomena.</li> </ul>
6.	How might our approach to <b>risk taking be stifling</b> our organisations?	<p>The aim of the question is to stimulate the debate about the balancing of risk and reward.</p> <p>The question is based on research:</p> <ul style="list-style-type: none"> <li>• That sees all risks being associated with a <b>benefit</b> (an organisational output) and asks where you are unable to do so, why are you taking them?</li> <li>• Into the relationship between risk and <b>performance management</b> regimes.</li> <li>• That see organisations and their clients benefiting from the proposed activity and therefore there will also be downside from being <b>overcautious</b>.</li> </ul>
<b>The Group</b>		
7.	Are we aware of factors that might (1) inhibit us from <b>taking note of warning signs</b> , (2) those that might <b>affect our perception</b> of them or (3) those that might <b>restrain us from acting</b> upon them?	<p>The aim of the question is to bring to the debate the factors that impede the perception of risk which cause risk signals to be missed, mis-perceived or not acted upon.</p> <p>The question is based on research that has:</p> <p>Factors that impede people accepting warnings include:</p> <ul style="list-style-type: none"> <li>• Barriers, within the individual, such as <b>(1)</b> being more concerned by things that affect us directly, rather than things that affect others <b>(2)</b> the short-term is privileged over the long term and <b>(3)</b> the tangible is privileged over the intangible.</li> <li>• These barriers are both cultural and managerial. This pattern of seeing the details but being unable to recognise the big picture is commonplace in accidents hence the proposal of ideas such as: <ul style="list-style-type: none"> <li>○ <b>“Mindfulness”</b>.</li> <li>○ People, acting within social organisations, downplay certain risks and emphasise others</li> </ul> </li> <li>• Organisational cultures may desensitise perceptions and thus create (issues of <b>“Can-do Culture”</b> and <b>Atavism</b>).</li> <li>• <b>Hubris</b></li> <li>• <b>Blind spots</b></li> <li>• <b>Inattentional blindness</b></li> <li>• <b>Fallacy of complete reporting</b></li> <li>• <b>The “Organisational distortion of information”</b></li> <li>• The social status or perceived credibility of the messenger.</li> <li>• The organisation’s <b>cultural orientation towards risk</b></li> </ul>

	Questions	Background
		<p>Factors that affect the perception of risk include:</p> <ul style="list-style-type: none"> <li>• The relationship between the individuals (<b>“stakeholders”</b>), the organisation and the event. This in turn may be affected by history, competition, scarcity, bureaucratic procedures, power, rules and norms, hierarchy, culture, and patterns of information.</li> <li>• The relationship between <b>“ victim groups”</b> and the organisation</li> <li>• <b>“Risk Distribution”</b></li> <li>• Whether they are seen as <b>“insiders”</b> or <b>“outsiders”</b>.</li> <li>• How perceptions may <b>change over time</b></li> <li>• How individuals or organisations <b>“forget to be afraid”</b></li> <li>• How individuals might be affected by <b>“risk homeostasis”</b></li> <li>• Whether a scientific or intuitive approach is used,</li> <li>• The <b>“problem of induction”</b></li> <li>• <b>“Fallacy of centrality</b></li> </ul> <p>The phenomena that have been seen to prevent appropriate action being taken are:</p> <ul style="list-style-type: none"> <li>• Denial / <b>“it couldn’t happen here”</b></li> <li>• <b>“The unresponsive bystander”</b></li> <li>• The <b>“Unrocked boat”</b></li> <li>• <b>“Learned helplessness”</b></li> <li>• <b>Social shirking</b></li> <li>• Failure to <b>ask the “right” question.</b></li> </ul>
8.	<p><b>How well do we understand</b> our system’s operating modes; how well do we know those who will have to handle potential crises and are we sure they are equipped to do so?</p>	<p>The aim of the question is to prompt consideration of operational modes other than that which is considered to be normal; the normal being that state which predominates in formal procedures. This may be both a heightened state of activity, as in an emergency or a reduced level of activity such as a power station during a period of maintenance. Both are states of operation with which operators are less familiar and therefore have been found to be more prone to making errors.</p> <p>The question is based on research that has:</p> <ul style="list-style-type: none"> <li>• Identified that some causes of unwanted events are due to mistakes when organisations rotate between <b>“Operational Modes”</b>.</li> <li>• Identified that due to human attention and understanding being limited and transitory, they may experience difficulty retaining accurate <b>Situational Awareness</b> resulting in <b>Loosing the bubble</b> or <b>Cosmological episodes.</b></li> <li>• Identified that systems degrade thereby create</li> </ul>



	<b>Questions</b>	<b>Background</b>
		gaps that provide opportunities for unwanted events to occur ( <b>Incubation Period/ Disaster Incubation Theory</b> ) and for management to catch the problem and resolve it before the unwanted occurs ( <b>Recovery Window</b> )
9.	How do we judge the most <b>appropriate level</b> within our organisations for decisions to be made and that each <b>decision maker</b> has the appropriate “ <b>seat of understanding</b> ”, resources and the ability to act in a timely manner?	<p>The aim of the question is to stimulate debate about where within the organisation decisions are being made and whether this is appropriate for the organisation’s need compared to the risks they face.</p> <p>The question is based on research into:</p> <ul style="list-style-type: none"> <li>• <b>Seat of understanding</b></li> <li>• The Intuitive understanding of an issue</li> <li>• Decision making with incomplete information</li> <li>• Issues <b>inside or outside of analysis</b></li> <li>• Leaders as <b>Expert or Investigator</b></li> <li>• “<b>Deference to Expertise</b>”</li> <li>• Whether “<b>Centralisation or Decentralisation</b>” would be in the best interest of the organisation.</li> <li>• Whether judgement may be clouded by issues such as hierarchy, the “<b>Need for control</b>”, ego and hubris.</li> </ul>
10.	Are we familiar with the <b>dynamics</b> and personal interactions that might cause our executive <b>team</b> to be <b>dysfunctional</b> (thereby generating risk) and what are we doing to ensure that we do not fall into these traps?	<p>The aim of the question is to stimulate debate into whether the key decision group is impeded in their endeavours by recognised issues concerning group dynamics and understanding the risk that this might create.</p> <p>The origin of the question is in the UK Corporate Governance Code (2010) which, in Section B, requires “The board should undertake a formal and rigorous annual evaluation of its own performance and that of its committees and individual directors”. The factors identified in the research may adversely affect the board’s risk management performance.</p> <p>The question is based on research into <b>organisational bias</b> that might include:</p> <ul style="list-style-type: none"> <li>• <b>Talking past each other</b></li> <li>• <b>Groupthink/ polarization</b></li> <li>• <b>Folly</b></li> <li>• Being a “<b>real team</b>”</li> <li>• <b>Failure to launch</b></li> <li>• <b>Risk thermostat</b></li> <li>• <b>Social Amplification of Risk/ “Risky shift”</b></li> </ul>
<b>The Process</b>		
11.	Can we show that we have	The aim of the question is to encourage an

	<b>Questions</b>	<b>Background</b>
	a culture that takes every available <b>opportunity to learn</b> from unwanted events?	<p>examination of whether the organisation is taking every appropriate opportunity to learn from both their own experience and that of others.</p> <p>The question is based on research into learning from:</p> <ul style="list-style-type: none"> <li>• <b>Free lessons</b></li> <li>• <b>Cheap lessons/ vicarious learning</b></li> <li>• <b>Expensive lessons</b></li> <li>• <b>Superstitious learning</b></li> </ul> <p>This research also relates to how the organisation guards against:</p> <ul style="list-style-type: none"> <li>• “Looking without seeing” /<b>Inattentional blindness</b></li> <li>• <b>Forgotten lessons</b></li> <li>• <b>Lost saliency</b></li> <li>• <b>Distancing through differencing</b></li> <li>• Difficulty in learning from rare events</li> <li>• <b>Management distancing</b></li> </ul>
12.	How do we, as an executive group and as an organisation, ensure that we are getting <b>the appropriate and relevant data</b> to feed into our risk discourse? How do we judge “appropriate” and “relevant”?	<p>The aim of the question is motivate an executive team to examine how they can ensure that the right information (needed to monitor and manage their risks) is getting to the right people within the right timeframe, and to examine what the available data actually tells them.</p> <p>The question is based on research into <b>Failure of communications</b>. This encompasses:</p> <ul style="list-style-type: none"> <li>• Data from <b>audit and regulatory processes</b> and the advantages and disadvantages between the various configurations for internal &amp; external audit or regulation.</li> <li>• Use of <b>Risk Indicators</b> and other management performance data</li> <li>• When “<b>reporting by exception</b>” would be inappropriate</li> <li>• <b>Variable disjuncture</b></li> <li>• <b>Distributed Intelligence</b></li> <li>• <b>Fallacy of complete reporting</b></li> <li>• <b>Taboo data/ facilitation</b></li> <li>• <b>Misinterpreting Signals</b></li> </ul>
13.	How do we judge whether our <b>methods of risk analysis</b> are appropriate to the risks faced?	<p>The aim of the question is to encourage a re-examination of the way the organisation analyses its risks and how it judges whether what they do is appropriate to the risks faced.</p> <p>The question is based on research into issues around how risks are assessed and analysed:</p> <ul style="list-style-type: none"> <li>• The analysis being based on consideration of <b>Two</b></li> </ul>

	Questions	Background
		<p><b>Dimensions of Risk or Six Dimensions of Risk</b></p> <ul style="list-style-type: none"> <li>• Risk Wheels</li> <li>• Paradigm flip</li> <li>• Compound abstraction</li> <li>• Frequency or Probability</li> <li>• Statistical or qualitative analysis</li> <li>• Fallacy of linearity</li> <li>• Failure of imagination</li> <li>• Requisite imagination</li> <li>• Over or underestimate risk potential (such as “Feynman’s Numbers” and other steps to ‘reduce the effect of personal bias’)</li> <li>• Compound risk</li> <li>• Safe Space Model</li> </ul> <p>As part of the analytical process consideration has also been given to the mechanism of conscious or sub-conscious factors associated with risk decisions</p> <ul style="list-style-type: none"> <li>• Context,</li> <li>• Efficiency Thoroughness Trade-Off’s</li> <li>• Satisficing</li> <li>• Sacrificing</li> <li>• Suffisance,</li> <li>• Minimising cognitive effort, Minimising workload</li> <li>• (sub)-optimisation,</li> <li>• “cost-benefit” trade-offs</li> </ul>
14.	<p>After an unwanted event will our <b>decision-making stand up</b>, in hindsight, to critical <b>external scrutiny</b>?</p>	<p>The aim of the question is to encourage debate as to whether, in hindsight, decisions stand up to the most hostile scrutiny and can be justified .</p> <p>The question is based on research into</p> <ul style="list-style-type: none"> <li>• Insider /outsider analysis</li> <li>• Unethical behaviour/ amoral calculations</li> <li>• Executive Failure</li> <li>• The darkside of leadership</li> <li>• Good people/ Bad Work</li> </ul>
15.	<p>How do we ensure that all the members of the executive have a <b>shared view &amp; understanding</b> of the organisation, the way it works and its risk?</p>	<p>The aim of the question is to stimulate debate into whether all members of the executive team see the organisation in the same way and therefore are making judgements using sufficiently consistent paradigms. Difficulties in this area may be manifested in different members of a group trying to resolve different issues while believing that they are working on the same one to the same end.</p> <p>The question is based on research into:</p> <p style="padding-left: 40px;">Shared understanding</p> <ul style="list-style-type: none"> <li>• Common Understanding</li> </ul>

	Questions	Background
		<ul style="list-style-type: none"> <li>• <b>Cross-understanding</b></li> <li>• <b>Mental models/ schema</b> The difficulty people have in handling complexity:</li> <li>• The <b>desire to simplify</b></li> <li>• <b>Reluctance to simplify</b></li> <li>• <b>The “Tame, Wicked and Critical framework; Tame, Wicked and Wicked Messy frameworks; Cynefin frameworks</b> Tackling the interactions within Organisational Design:</li> <li>• <b>Interactive Complexity and close coupling</b></li> <li>• <b>The Space Between</b></li> <li>• <b>Dysfunctional interactions</b></li> </ul>
16.	What evidence can be provided that our plans and policies are robust enough to withstand an unwanted event (“ <b>a brutal audit</b> ”).	<p>The aim of the question is to fuel debate as to whether the organisation’s plans and policies meet their proscribed purpose or whether they perform simply a symbolic function. The test for such policies is to examination in foresight whether in hindsight, after a major unwanted event, they will be found to be fit for purpose.</p> <p>The question is based on research about</p> <ul style="list-style-type: none"> <li>• <b>Abrupt and brutal audits</b></li> <li>• <b>Fantasy documents</b></li> <li>• <b>Myth management</b></li> </ul>
17.	How might we notice where an emerging gap between our practice and our formal procedures becomes potentially dysfunctional (“ <b>drift</b> ”)?	<p>The aim of the question is to arouse discussion over whether the organisation is vulnerable due to the slow decoupling of current practice from formal polices and whether this is desirable or dangerous for the organisation .</p> <p>The question is based on research into how an organisation may identify such “drift”. This covers such facets as:</p> <ul style="list-style-type: none"> <li>• <b>Event incubation/ Disaster Incubation Theory</b></li> <li>• <b>Safety drift</b></li> <li>• <b>Practical Drift</b></li> <li>• <b>Normalisation of Deviance</b> <ul style="list-style-type: none"> <li>○ (1) Production of Culture</li> <li>○ (2) Culture of Production;</li> <li>○ (3) Structural Secrecy</li> </ul> </li> <li>• <b>Strategic drift.</b></li> <li>• <b>Muddling through</b></li> </ul>
18.	When would we expect our people to use their <b>experience and initiative</b> rather than adhering strictly to written plans or standards; when might this	<p>The aim of the question is to fuel debate over the place and role, advantages and disadvantages for rule-based action within and organisation.</p> <p>The question is based on research into</p>

	Questions	Background
	<p><b>cause problems?</b> Where might our “<b>rule-book</b>” <b>actually hamper</b> the achievement of our organisational goals?</p>	<ul style="list-style-type: none"> <li>• <b>Control v. Management</b></li> <li>• <b>Centralisation v. Decentralisation</b></li> <li>• <b>Pooled, Sequential and Reciprocal Interdependence/ “Practical Sailing”</b></li> <li>• <b>Rule-based v. Knowledge-based</b></li> <li>• <b>Feed Forward</b> systems</li> <li>• <b>Verbatim Compliance</b> or accept the need for <b>variance</b> in both performance and process in order to adapt</li> <li>• <b>Types of Violations</b></li> <li>• <b>Permission to Break Rules</b> and where might this create significant vulnerabilities?</li> <li>• <b>Liability of Newness</b></li> <li>• <b>Unruly Technology</b></li> </ul>
<b>Summarising Questions</b>		
19.	<p>What “<b>unwanted</b>” occurrences (including those perceived as “<b>inconceivable</b>”) might affect our organisation?</p>	<p>The aim of the question is to broaden the debate in order to encourage discussion over the concept of the “<b>unwanted occurrence</b>”, why events may be considered to be “inconceivable”, to make explicit the assumptions that underlie these judgements and to consider how this may lead to “<b>failures of foresight</b>”</p> <p>The question is based on research into considering how we can ascertain:</p> <ol style="list-style-type: none"> <li>(1) What might cause an unwanted occurrence,</li> <li>(2) How might we prevent it,</li> <li>(3) Whether there is a formal process in place designed to deliver the goal or prevent the unwanted occurrence,</li> <li>(4) Whether our people are effectively trained,</li> <li>(5) Whether they have the necessary resources,</li> <li>(6) Whether they would recognise problems should they arise,</li> <li>(7) Whether they would see the right action to take,</li> <li>(8) Whether they would implement the necessary action appropriately,</li> <li>(9) Whether we would get the same answers if we asked these questions tomorrow?</li> </ol>
20.	<p>What evidence exists to show that our organisation’s culture, structure or processes do NOT <b>provoke errors</b> or rule violations?</p>	<p>The aim of the question is to provoke an overarching discussion as to whether an organisation by its action may, unwittingly, cause errors and mistakes to happen within that organisation.</p> <p>The question is based on research into:</p> <ul style="list-style-type: none"> <li>• <b>Error-inducing organisations</b></li> <li>• <b>Error-provoking organisations</b></li> <li>• <b>The five classic patterns of error creating</b></li> </ul>

	<b>Questions</b>	<b>Background</b>
		<ul style="list-style-type: none"><li>• <b>The risk exposure calculator</b></li><li>• <b>Vulnerable System Syndrome</b></li><li>• <b>Production Pressure</b></li><li>• <b>Latent error/ “Resident pathogens/ the Knotted Rubber Band Model”</b></li><li>• <b>The wrong kind of Excellence</b></li></ul>

	<b>Usability</b> (I understood the question at face value)	<b>Utility</b> (the question provides a useful prompt to my thinking)	<b>Feasibility</b> (I could use the question as part of risk focused discussion)	I see benefit from learning more on the issues that underlie the question
1.	I agree / I disagree	I agree / I disagree	I agree / I disagree	I agree / I disagree
2.	I agree / I disagree	I agree / I disagree	I agree / I disagree	I agree / I disagree
3.	I agree / I disagree	I agree / I disagree	I agree / I disagree	I agree / I disagree
4.	I agree / I disagree	I agree / I disagree	I agree / I disagree	I agree / I disagree
5.	I agree / I disagree	I agree / I disagree	I agree / I disagree	I agree / I disagree
6.	I agree / I disagree	I agree / I disagree	I agree / I disagree	I agree / I disagree
7.	I agree / I disagree	I agree / I disagree	I agree / I disagree	I agree / I disagree
8.	I agree / I disagree	I agree / I disagree	I agree / I disagree	I agree / I disagree
9.	I agree / I disagree	I agree / I disagree	I agree / I disagree	I agree / I disagree
10.	I agree / I disagree	I agree / I disagree	I agree / I disagree	I agree / I disagree
11.	I agree / I disagree	I agree / I disagree	I agree / I disagree	I agree / I disagree
12.	I agree / I disagree	I agree / I disagree	I agree / I disagree	I agree / I disagree
13.	I agree / I disagree	I agree / I disagree	I agree / I disagree	I agree / I disagree
14.	I agree / I disagree	I agree / I disagree	I agree / I disagree	I agree / I disagree
15.	I agree / I disagree	I agree / I disagree	I agree / I disagree	I agree / I disagree
16.	I agree / I disagree	I agree / I disagree	I agree / I disagree	I agree / I disagree
17.	I agree / I disagree	I agree / I disagree	I agree / I disagree	I agree / I disagree
18.	I agree / I disagree	I agree / I disagree	I agree / I disagree	I agree / I disagree
19.	I agree / I disagree	I agree / I disagree	I agree / I disagree	I agree / I disagree
20.	I agree / I disagree	I agree / I disagree	I agree / I disagree	I agree / I disagree

	Questions	Background
<b>Problem</b>		
1.	Do we have clear and fully justifiable rules for which scenarios are <b>included in</b> and <b>excluded from</b> our risk management process?	
2.	While we normally monitor “ <b>outcomes</b> ”, where do we need to monitor the <b>processes</b> that might create unacceptable outcomes?	
3.	What risks are “ <b>acceptable</b> ” to us and why; how have we tested our reasoning (against both internal and external yardsticks) to ensure that our reasoning is robust?	
4.	Of those issues that we judge to be, so improbable as to be “inconceivable”, which of these still have such <b>potentially serious consequences</b> (unacceptable) that we must stay alert to them?	
5.	Do we agree about in what circumstances (1) we will prepare an alternative plan ( <b>anticipation</b> ), (2) we will set aside reserve capacity ( <b>resilience</b> ) or (3) where we just react to situations ( <b>reactive</b> )?	
6.	How might our approach to <b>risk taking be stifling</b> our organisations?	
<b>The Group</b>		
7.	Are we aware of factors that might (1) inhibit us from <b>taking note of warning signs</b> , (2) those that might <b>affect our perception</b> of them or (3) those that might <b>restrain us from acting</b> upon them?	
8.	<b>How well do we understand</b> our system’s operating modes; how well do we know those who will have to handle potential crises and are we sure they are equipped to do so?	
9.	How do we judge the most <b>appropriate level</b> within our organisations for decisions to be made and that each	



	Questions	Background
	<b>decision maker</b> has the appropriate “ <b>seat of understanding</b> ”, resources and the ability to act in a timely manner?	
10.	Are we familiar with the <b>dynamics</b> and personal interactions that might cause our executive <b>team</b> to be <b>dysfunctional</b> (thereby generating risk) and what are we doing to ensure that we do not fall into these traps?	
<b>The Process</b>		
11.	Can we show that we have a culture that takes every available <b>opportunity to learn</b> from unwanted events?	
12.	How do we, as an executive group and as an organisation, ensure that we are getting <b>the appropriate and relevant data</b> to feed into our risk discourse? How do we judge “appropriate” and “relevant”?	
13.	How do we judge whether our <b>methods of risk analysis</b> are appropriate to the risks faced?	
14.	After an unwanted event will our <b>decision-making stand up</b> , in hindsight, to critical <b>external scrutiny</b> ?	
15.	How do we ensure that all the members of the executive have a <b>shared view &amp; understanding</b> of the organisation, the way it works and its risk?	
16.	What evidence can be provided that our plans and policies are robust enough to withstand an unwanted event (“ <b>a brutal audit</b> ”).	
17.	How might we notice where an emerging gap between our practice and our formal procedures becomes potentially dysfunctional (“ <b>drift</b> ”)?	

	<b>Questions</b>	<b>Background</b>
18.	When would we expect our people to use their <b>experience and initiative</b> rather than adhering strictly to written plans or standards; when might this <b>cause problems</b> ? Where might our <b>“rule-book”</b> <b>actually hamper</b> the achievement of our organisational goals?	
<b>Summarising Questions</b>		
19.	What <b>“unwanted”</b> occurrences (including those perceived as <b>“inconceivable”</b> ) might affect our organisation?	
20.	What evidence exists to show that our organisation’s culture, structure or processes do NOT <b>provoke errors</b> or rule violations?	
21.	<b>Additional Comments</b>	

## Appendix E Post Stage 3 Question Revisions

<b>The Problems</b>	
1.	<del>Do</del> <i>Where do we need to</i> we have clear and fully justifiable <del>rules criteria</del> for which <i>events or scenarios</i> are <b>included in</b> and <b>excluded from</b> our risk management process?
2.	While we normally monitor <b>“outcomes”</b> (“ <i>end</i> ”), where do we need to monitor the <b>processes</b> (“ <i>means</i> ”) that might create unacceptable outcomes?
3.	What risks are <b>“acceptable”</b> to us and why; how have we tested our reasoning <i>for both core and non-core activity</i> (against both internal and external yardsticks) to ensure that our reasoning is robust?
4.	Of those issues that we judge to be so improbable as to be “inconceivable”, which of these still have such <b>potentially serious consequences</b> (unacceptable) that we must stay alert to them?
5.	<del>Do we agree about in what circumstances</del> <i>What evidence do we have that we have a shared understanding about</i> <del>when</del> : (1) <i>when</i> we will prepare an alternative plan (anticipation), (2) <del>when</del> we will set aside reserve capacity (resilience) or (3) where we just react to situations (reactive)?
6.	How might our approach to <b>risk taking be stifling</b> our organisations?
<b>The Group</b>	
7.	Are we aware of what factors <del>that might</del> : (1) inhibit us from <b>taking note of warning signs</b> , (2) <del>those that might</del> <b>affect our perception</b> of them or (3) <del>those that might</del> <b>restrain us from acting</b> upon them?
8.	<b>a. How well do we understand</b> our system’s operating modes (routine, high tempo, emergency and maintenance) <i>&amp;and</i> manage the transition between them? <b>b.</b> How well do we know those who will have to handle potential crises and are we sure they are equipped to do so?
9.	How do we judge the most <b>appropriate level</b> within our organisations for decisions to be made and <del>that</del> <i>whether</i> each <b>decision maker</b> has the appropriate <del>“seat of”</del> <i>intuitive understanding of the issues and the organisation</i> , resources and the ability to act in a timely manner?
10.	<del>Are we familiar with</del> <i>What proof is there that we are conscious of the</i>

	<b>dynamics</b> and personal interactions that might cause <i>our board and executive team</i> to be <b>dysfunctional</b> (thereby generating risk) and what are we doing to ensure that we do not fall into these traps?
<b>The Process</b>	
11.	<del>Can we show</del> <i>How can we be sure</i> that we have a culture that takes every key <b>opportunity to learn</b> from unwanted events experienced within the organisation ( <i>accidents and near-misses</i> ) and from the experience of other organisations?
12.	How do we, as <del>an</del> the <i>board/executive group</i> and as an organisation, ensure that we are getting <b>the appropriate and relevant data</b> to feed into our risk discourse? How do we judge appropriate and relevant?
13.	How do we judge whether <i>the way we analyse risk</i> is our <del>methods of risk analysis</del> <b>analysis</b> are appropriate to the risks we faced?
14.	<i>What might give us confidence that</i> after an unwanted event <del>will</del> our <b>decisions-making will stand up</b> , in hindsight, to critical <b>external scrutiny</b> ?
15.	How do we ensure that all the members of the <i>board/executive</i> have a <b>shared view and understanding</b> of the organisation, the way it works and its risks?
16.	What evidence can be provided that our plans and policies are robust enough to withstand a disruptive event ( <del>“a brutal audit”</del> ).
17.	How might we notice where an emerging gap between our practice and our formal procedures becomes <del>a potentially dysfunctional source of risk</del> ( <del>“drift”</del> )?
18.	When would we expect our people to use their <b>experience and initiative intuition</b> rather than adhering strictly to written plans or standards; when might this <b>cause problems</b> ? Where might our <b>“rule-book” actually hamper</b> the achievement of our organisational goals?
<b>Summarising Questions</b>	
19.	What <b>“unwanted”</b> occurrences (including those perceived as <b>“inconceivable”</b> ) might eaffect our organisation?
20.	What evidence exists to show that our organisation’s culture, structure or processes do NOT <b>provoke errors</b> or rule violations?