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Tame, Messy and Wicked Risk Leadership

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INTRODUCTION

The real trouble with this world of ours, is not that it is an unreasonable world, nor even that it is a reasonable one. The commonest kind of trouble is that it is nearly reasonable, but not quite. Life is not illogicality; yet it is a trap for logicians. It looks a little more mathematical and regular than it is; its exactitude is obvious, but its inexactitude is hidden; its wilderness lies in wait.

GK Chesterton[1] (1908)

This book has been written because of my continuing frustration that risk management as described by most current project management literature does not correlate very closely with my *own* experience of the 'real' world – a feeling apparently shared by many project professionals in the private, public and third sectors. These beliefs appear not even to be unique to the UK or indeed Europe; having facilitated many seminars in the Middle East, North and South America and Asia, I repeatedly encountered similar problems, namely that the behavioural and societal aspects of risk are under represented in the project risk management processes. This appears to be compounded by the engineer's and project manager's apparent yearning for a world of unity and simplicity in which to practise their skills, where in this 'reality' there is a compulsion to reduce all the complexities in the natural world to the simple application of learnt processes and explicit knowledge.

1 Chesterton G.K. (1908) *Orthodoxy*, New York: Dodd, Mead & Co.

Thus, the first problem with project risk management, as presently practised, is that it tends to reduce the likelihood and impact of experiencing harmful events to a simple mathematical equation. Typically, risk is configured technically – the preserve of specific experts who use mapping and diagnostic tools to isolate and cater for risks. Project management and financial institutions provide a variety of methods to evaluate expectant levels of risk.

Risk Definitions

The Association for Project Management defines project risk management as 'a *structured process* that allows overall project risk to be understood and managed proactively, *optimising* project success by minimising threats and maximising opportunities'.[2] The Office for Government Commerce, in its PRINCE2 and Management of Risk Processes, states 'Project management must *control* and contain risks if a project is to stand a chance of being successful',[3] and evaluates risk in terms of probability, impact and proximity (the distance in time from its perceived occurrence). British Standard 31100 Code of Practice for Risk Management uses the terms 'likelihood' and 'consequence' to evaluate risk in line with the Australian and New Zealand standards.

Whilst this capability to define risk in a few simple parameters *appears* useful, risk management, constructed in accordance with the rules of probability can give the illusion of control and understanding when in fact there is only further confusion. Probability theory enables organizations to devise risk registers that quantify risks in terms of figures, adding credence and authority to consequent policy and strategy. The impression is of control. In all of these areas good process is the dominant control mechanism.

In the past, and I suspect in some cases still today, risk, particularly in the construction industry, has been dominated by a 'check list mindset'. The move to more complex projects means that this mindset

2 Association for Project Management (2006) *APM Body of Knowledge*, 5th edn, Princes Risborough: APM Publishing.

3 Office of Government Commerce (2009) *Managing Successful Projects with PRINCE2*, Norwich: The Stationery Office.

no longer meets the requirements of the industry. Sir John Egan, in *Rethinking Construction*,[4] (the Egan Report) called for things to be done differently in the future to enable projects to be realized on time and under budget, in the light of new concepts, e.g. integrated teams and partnering. Rather than see problems as the result of a lack of information, which can be resolved through the successive acquisition of data, I argue that many risk issues arise as wicked problems and messes – uncertainties rooted not so much in a lack of information, but as a result of behavioural and/or systems complexity and interaction. The simplicity of probability (likelihood) multiplied by consequence (impact) does not in any way model the reality of risk.

The second immediate problem, which is described by Charles Perrow in his book *Normal Accidents*[5] is the tendency to assume that events occur independently of one another. In an increasingly complex world this is proving to be a major flaw, even if and when the individual components relating to a perceived failure can be wholly identified. Combinations of events, which have hitherto been considered independent, can lead to major systems failures and events, having interacted in ways which the risk and project managers have either thought impossibly remote or have not even considered. Two examples are the *Challenger* Space Shuttle launch decision and the Heathrow Express collapse.

The *Challenger* Launch Decision

The disastrous launch of *Challenger* in 1986 is primarily considered to have been due to a technical failure of the primary and secondary 'O' rings on the solid rocket boosters. However the truth is far more complicated. True, the rubber 'O' rings' resilience was impaired by the cold temperature on the morning of the launch, which led to the propellant gases reaching and igniting the right solid booster tank with catastrophic consequences.

4 Sir John Egan (1998) *Rethinking Construction, The Report of the Construction Task Force to the Deputy Prime Minister, John Prescott, on the Scope for Improving the Quality and Efficiency of UK Construction*, London: Department of Trade and Industry.

5 Perrow, C. (1999) *Normal Accidents*, Princeton: Princeton University Press.

However, NASA came under scrutiny for organizational culpability. After the disaster, two commissions began an investigation of NASA: the Presidential Commission, headed by William P. Rogers, and the House Commission. The Presidential Commission concluded that NASA's flawed decision-making process contributed to the technical malfunction that caused the disaster. While the House Committee agreed with several of the Presidential Committee's findings, they blamed not the decision-making process, but the decision-makers themselves.

Various factors contributed to the fateful decision, including acute pressure on the project and the misinterpretation of risk levels. Three main sources placed significant pressure on NASA to launch the *Challenger* Mission as speedily as possible: government, client and the media. Government (Congress) placed pressure on NASA to launch for economic reasons. At the time of the *Challenger* mission, NASA operated far over budget and far below the number of flights promised. Originally, NASA aimed to help pay for itself by sending up 24 payloads per year. When NASA began to fall behind schedule, the programme began to feel the pressure to produce more results, as fast as possible. Because NASA had taken over the responsibility of launching military satellites from the Air Force, NASA felt pressure to keep one of their main clients – the military – happy. If they failed to meet expectations, they would lose this responsibility to the Air Force, who surely would have been pleased to regain control of satellite launches. The final significant and public source of pressure came from the media. With each launch delay, NASA's credibility suffered as the press made humorous comments about NASA's seeming inability to get things done. From a risk assessment perspective, Herkert[6] claimed that 'outright dishonesty as opposed to misunderstanding or incautious practice' was the cause of the disaster. He describes two stages of risk assessment. The first is based on probability and likelihood and considered the domain of the technical experts, and the second is based on the acceptability of the solution and he deems it to be political. NASA managers offered their own risk assessments, claiming they were based on 'engineering judgement'.

6 Herkert, J.R. (1991) Management's Hat Trick: Misuse of 'Engineering Judgment' in the *Challenger* Incident, *Journal of Business Ethics* 10, pp. 617–620.

The managers' risk estimates fell far below those of engineers. Herkert uses the example of a manager telling an engineer to take off his 'engineering hat'[7] and put on his 'management hat', to show how the decision making process can be biased by simple statements from peer groups. Herkert claims that managers appropriated the expert role of risk measurement and misrepresented it as engineering judgement. For Herkert, the disaster shows a misuse of technology for politics. He called for stronger legal protection for whistleblowers. For a more detailed study, the reader is directed to Diane Vaughan's comprehensive book on the subject, *The Challenger Launch Decision* (1996).[8]

THE HEATHROW EXPRESS COLLAPSE (HEALTH AND SAFETY EXECUTIVE (HSE) REPORT[9])

During the nightshift on 20–21 October 1994, a civil engineering disaster occurred when tunnels in the course of construction beneath Heathrow Airport's Central Terminal Area (CTA) collapsed. They continued to collapse over the following days. The public and those engaged in the construction work were exposed to grave risk of injury. Workers were evacuated from the tunnels minutes before the first collapse; some had been carrying out repairs to critical parts of a tunnel lining while others had been advancing a parallel tunnel. By remarkable good fortune no one was injured. Major short-term disruption to the airport followed. The Heathrow Express Rail Link project, of which the tunnels were a part, suffered a severe setback as a result. The New Austrian Tunnelling Method (NATM) and compensation grouting had been used to construct the tunnels. The direct cause of the tunnel collapses was considered to be a chain of events involving:

- substandard construction in the initial length of the CTA concourse tunnel over a period of some three months;
- grout jacking that damaged the same length of tunnel, plus inadequately executed repairs to it some two months before the collapse;

7 Presidential Commission on the Space Shuttle *Challenger* Accident (1986) *Report of the Presidential Commission on the Space Shuttle Challenger Accident, June 6th, 1986*, Washington, DC: Government Printing Office.

8 Vaughan, D. (1996) *The Challenger Launch Decision: Risky Technology, Culture and Deviance at NASA*, Chicago: University of Chicago Press.

9 Heath and Safety Executive (2000) *The Collapse of NATM Tunnels at Heathrow Airport*, Norwich: Her Majesty's Stationery Office.

- construction of a parallel tunnel in failing ground;
- a major structural failure in the tunnels, progressive failure in the adjacent ground and further badly executed repairs during October 1994.

There were also what were considered to have been weaknesses in the contingency and emergency procedures. Hazards from the *in situ* (i.e. cast-in-place) construction of thin, shell linings and the complementary use of compensation grouting were not identified by all the parties. Risk was not avoided or reduced through the contractual arrangements, the design of the permanent works and the NATM design. Risks were not controlled, during construction, through the 'defensive' systems (that is, preventative management systems) used by the parties. The particular risks associated with remedial work were not recognized and risk of collapse did not appear on the risk register and, subsequently, no mitigating actions were identified. The report concluded that collapses could have been prevented, but a cultural mindset focused attention on the apparent economies and the need for production rather than the particular risks. From the early stages of the project through to final collapse, there were failures to demonstrate the necessary level of care, and serious errors were made. Warnings of the impending collapse were present from an early stage in construction, but these were not recognized. The investigation found that the incident exhibited all the hallmarks of an 'organizational accident'; that is, a multiplicity of causes led to the position where systems variously used by the client, designers and contractors failed and a major accident adversely affecting the safety of a large number of people occurred. There were undoubtedly human errors, but these were merely a consequence of foreseeable organizational failures. The causes of the incident were rooted in failures in 'defensive' systems that did not adequately deal with hazard identification, risk avoidance and reduction and the control of remaining residual risks.

Why are these two incidents important for our understanding of risk management today? The organizations involved were considered best in their class for the type of projects they were undertaking and staffed by highly qualified engineers and managers trained at some of the best institutions in the world. Their processes for project management were also certified at the highest level, yet despite this the failures still occurred with catastrophic consequences.

In the *Challenger* project, the probability of failure with loss of vehicle and of human life ranged from 1:100 to 1:100,000; the higher

figure coming from the engineers and the very low figure from management.[10]

In the Heathrow Express project, completed risk assessments on generic forms made no mention of collapse. Instability was assessed as a frequent occurrence with a probability of minor injuries, but with no effect to the public. This error may have misled people into thinking that major collapses were not possible. Risk assessments completed for Terminal 4 (T4) seem to have been photocopied for reuse on the Central Terminal Area and, critically, no risk assessments were prepared for repairs to the invert, leading to repairs being unplanned rather than programmed activities. Again project pressure is seen as contributing to the problem: 'Senior BAA managers came under considerable pressure to reduce planned supervisory resources' and 'there were insufficient resources to carry out the auditing programme they had planned'.[11]

This would appear to indicate that our present risk practices, even within 'best in class' organizations, do not pay enough attention to behavioural and organizational aspects of risk management and, secondly, that risk experts and decisions-makers seem unable to accurately perceive the likelihood of failure and their strategic view and access to critical information differs widely, depending on their position within the organizational chain.

In an MBA study that I carried out on the Terminal 5 project in 2000,[12] using risk workshops that took place four years apart (1996 and 2000), the data showed that in the first risk workshop, 11 of the top 15 risks could be described as technical, financial or economic. The risk register for the second workshop, which was run in a different way, enabled stakeholders to represent all facets of the business and showed that of those top 15 risks, 11 could be considered as focusing upon issues

10 Vaughan, *The Challenger Launch Decision*.
11 Heath and Safety Executive, *The Collapse of NATM Tunnels at Heathrow*.
12 Hancock, D. (2000) *Risk – The Talking Cure*, MBA thesis, University of Bath.

of behavioural and systems interdependence – a complete reversal of the initial assessment and one which the project managers felt was more representative of the actual risks facing the project. This study highlights the inability of many managers to grasp the real nature of risks facing the organization and which often are not predominantly of a technical nature.[13]

TRENDS AND CHANGES IN PROJECT MANAGEMENT TODAY

What have these previous mistakes to do with today's projects and project management delivery? Surely, we have learnt the lessons from past risk failures and moved on? If these were isolated accidents then I would agree. However, during workshops and seminars with project professionals, everyone without exception is able to produce examples of incidents in their organizations which, under slightly different circumstances, could have led to accidents similar to those mentioned above. Combine this with trends occurring across the project world, where projects are becoming more complex because:

- there is an increase in more complex solutions to problems;
- projects are being solved and delivered through diverse teams;
- there is increased use of relationships/partnerships;
- there is increased demand for societal interaction not simply technical solutions;
- there is increased demand for interaction with non-experts (general public);

13 Hancock, D. and Holt, R. (2003) Tame, Messy and Wicked Problems in Risk Management. WPS054, *Manchester Metropolitan University Business School Working Paper Series*, Manchester: Manchester Metropolitan University Business School.

- there is increased political involvement;
- customer expectation is higher;
- increased expectations of performance are based on more complex outcomes rather than simple output metrics;
- there is an increased requirement for better informed risk taking;
- there is increased media interest in any potential major project failure.

and we have a potential for more high profile disasters.

All of this means that projects are being delivered amidst an intense pressure to perform, through the use of ever more complex delivery mechanisms, under the watchful scrutiny of the general public with project managers being held to account by the media for any potential setback, all of which results in an *increased* likelihood of failing and failing catastrophically.

DIRECTION OF TRAVEL FOR THE PUBLIC SECTOR

Do projects in the public sector have it any easier? If anything, the pressure is greater. Here I use the UK as a typical example, but the principles apply to any public sector initiative.

The Labour government's 2007 agenda added yet more complexity for project delivery, driven by the 2007 Local Government White Paper[14] which:

14 Department for Communities and Local Government (2006) *Strong and Prosperous Communities* – The Local Government White Paper, Norwich: Her Majesty's Stationery Office.

- put citizens and communities at the heart of delivery;
- used the Sustainable Communities Act 2007 and the 'duty to involve' to ensure citizens are consulted on what constitutes 'value';
- changed the emphasis through the introduction of 30 new Public Sector Agreements towards outcomes and contributing to 'public value';
- introduced Local Area Agreements (LAAs) and Comprehensive Area Assessments (CAAs) to ensure citizens are involved in the delivery of public services in their local area;
- increased the use of relationships/partnerships with the third sector for delivery of services;
- invited shire, county and borough councils to apply for unitary status and for partnerships between county councils and all their district councils to pioneer as pathfinders for new models of two-tier working. (In the UK some rural areas, colloquially referred to as shires, have a two-tier level of local government whilst metropolitan areas come under a single authority.)

Combine these changes in direction with the question of what actually constitutes 'public value' and the breakdown in public confidence that private sector and free market economics are still the best way to deliver public services and we have to develop a new societal model for project delivery and a whole new area of societal risks.

PUBLIC VALUE

The notion of public value originated with Professor Mark Moore[15] from Harvard University and was modified and developed in the UK

15 Moore, M.H. (1995) *Creating Public Value: Strategic Management in*

through Professor John Benington, Professor of Public Policy and Management at Warwick Business School, and Will Hutton, Chief Executive at The Work Foundation. Benington defines public value in two ways:

- what the public values;
- what adds value to the public sphere.

This notion of public value appeared to be one of the driving philosophies behind the government's direction in their public service agreements (PSAs) and their introduction of LAAs and the CAAs.

This is all further complicated by a series of high-profile project failures in the public sector (including recent IT systems failures and numerous losses of personal data), leading to a loss of trust by the citizen over the public sector's ability to project manage and deliver projects on time and to budget. Terms such as the 'one size fits all model' are now, clearly, no longer applicable. Projects need to contribute positively to social and community cohesion, meaning that whilst technical competency and economic benefits are still important, they are no longer sufficient and the social dimensions of projects, at least in the UK, will dominate project delivery for some time to come.

CONCLUSION

This book is written to help risk professionals understand the limitations of the present programme and project risk management techniques and introduce the concepts of societal benefit and behavioural risk. It will show why project risk has followed a particular path, developing over time from the basis of engineering, science and mathematics and will reason that now is the time for complementary models from the worlds

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Government, Cambridge, MA: Harvard University Press.

of sociology, philosophy and politics to be added to the toolbox to assist in successful project delivery.

It will provide the reader with a framework to understand which particular type of problem may confront us and therefore which tools will provide the greatest potential for successful outcomes. It will also provide us with a way of dealing with projects which, no matter how well scrutinized, may not reveal an underlying optimal solution.