


Book reviews

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Michael Quinlan, *Ten Pathways to Death and Disaster: Learning from Fatal Incidents in Mines and Other High Hazard Workplaces*, The Federation Press: Sydney, NSW, Australia, 2014; 272 pp.: 9781862879775, RRP \$165.00

Reviewed by: Andrew Hopkins, *The Australian National University, Australia*

Michael Quinlan is well placed to write this book. He is a professor in the School of Management at the University of NSW, where he teaches courses in risk management and occupational health and safety. During his long career, he has chaired or otherwise been involved in several major inquiries into work health and safety issues. Perhaps the highest profile inquiry in which he participated was the investigation into the 2010 Pike River mining disaster in New Zealand, in which 29 men died. *Ten Pathways* grows out of that investigation but goes far beyond it and has roots much further back in time.

Major accidents in hazardous industries frequently give rise to public inquiries, especially where large numbers of people are killed. These inquiries uncover a wealth of information about how the organisations in question were operating – their cultures, incentive arrangements and organisational weaknesses, and in addition, the way in which regulators failed to deal with any of this. The material generated in these inquiries is so rich that writers such as myself can use it to produce what are almost ethnographic accounts of what happened. We are able to identify a series of human and organisational causes that gave rise to the incident, such that for each cause it is possible to say – had it been otherwise, this incident would not have occurred. But does it follow that correcting the problems identified in a particular incident will prevent any or all such incidents in the future? Unfortunately, case studies do not allow us to generalise with any certainty. It is only if these studies are synthesised that causal patterns can be identified and preventive recommendations made with reasonable confidence.

This is where Quinlan's book comes in. He has studied a large number of major incidents, each involving numerous fatalities, primarily in the mining industry, but also in other major hazard industries such as petrochemicals and aviation. This has enabled him to identify what he calls 'pattern causes' that repeatedly occur in these accidents. It will be helpful to list them here:

- Engineering, design and maintenance flaws;
- Failure to heed warning signs;
- Flaws in risk assessment;
- Flaws in management systems;
- Flaws in auditing systems;

- Economic or reward pressures compromising safety;
- Failures in regulatory oversight;
- Worker or supervisor concerns that were ignored;
- Poor workers management communication and trust;
- Flaws in emergency and rescue operations.

Not all of these causes were identified in every accident, but Quinlan found something very interesting – the more thorough the inquiry, the more of these pattern causes it uncovered. In particular, the inquiry into the Pike River mine disaster, one of the most thorough inquiries, found all 10 issues. What this suggests is that most if not all of these causes would have been identified in the other inquiries, had they been sufficiently thorough. One can be fairly confident, then, that this list will be relevant for most major accidents, and conversely that getting these things right will make such events far less likely. To be able to draw this conclusion is one of the major benefits of this book.

The value of identifying 10 quite specific causes is that it provides hazardous industries and their regulators a clearer indication of where to focus their attention. There are several of the 10 pattern causes that regulators currently tend NOT to emphasise – bonus systems for example. Just a few months before the Pike River explosion, the company board authorised a bonus system that would make large payments to every miner if a particular production target could be reached. This led miners and their managers to accept the hazardous conditions and inadequate precautions that culminated in the explosion. Such bonus arrangements are clearly dangerous, yet regulators seldom question them. In jurisdictions where the legal requirement is that safety be achieved so far as is reasonably practicable, one would think that regulators would be in a strong position arguing that such bonus systems were evidence that the company was not doing all that was reasonably practicable to achieve a safe workplace.

Another issue which has been identified in several major accident investigations is organisational structure, in particular the fact that safety and technical professionals are often subordinated to low-level line managers and have no direct link to the top echelons of the company. Again, a company that is organised in this way arguably is not ensuring safety, so far as is reasonably practicable, yet regulators never address this management system issue.

One of the interesting aspects of Quinlan's list is that it does not include 'defective safety culture' as one of the pattern causes. This is worthy of some comment. It is fashionable to identify a defective safety culture as the root cause of accidents. Those who use the term often assume that the way to tackle this problem is to change the way workers think about safety, by winning their hearts and minds. But this is bound to fail, unless organisations themselves change the way they do business. There is a good reason for saying this. The culture of the workplace is largely a reflection of what leadership wants or tolerates. It will only give greater emphasis to the control of catastrophic risk if leaders pay systematic attention to the way such risk is managed, and if they reward relevant behaviour, for example, the reporting of near misses and warning signs. Culture is better seen not as an explanation but as a description. It is 'the way things are done around here', and the way things are done around here is largely determined by top leadership. For good reason, then, defective safety culture is not on Quinlan's list.

Ten seems a large and rather daunting number of causes, but Quinlan does not leave it here. He highlights two which in some sense are root causes: first, production and cost pressures, and second, regulatory failure. These are the things that lie behind all 10 pattern failures. This is a useful simplification. But it also makes it clear how difficult it will be to make major hazard industries safer. Cost and production pressures are inherent in almost all industrial activity, and regulatory failure is also ubiquitous and virtually inevitable given the resourcing constraints under which many regulators operate. Nevertheless, the implication of the book is that safety is dependent on more effective regulatory regimes. Better regulation is probably the only way in which cost and production pressures can be prevented from undermining safety.

Quinlan provides a very useful summary of the regulatory regimes in several countries in chapter 2. There is now widespread (but not universal) agreement on what a good regulatory regime looks like in the field of industrial safety. Here are some of the important features:

- Process standards that mandate the identification, assessment and control of hazards.

This involves a move away from the purely prescriptive standards of the past, but there remains a place for prescription within the new model.

- A general duty of care, meaning a requirement to ensure safety as far as is reasonably practicable.

This is a goal-based requirement, the goal being to ensure safety as far as reasonably practicable, or alternatively, to reduce risk to as low as reasonably practicable. This is a vital goal. Without it, the hazard identification and control activities become just that, activities, which may degenerate into rituals with little attention paid to how effective they are.

- Provision for, and at times imposition of, heavy penalties on duty holders, both corporations and top individuals, for violations of the duty of care.

It is important that top office holders of large corporations be made accountable in this way. There is considerable evidence that this drives real engagement by these people.

- Involvement of the workforce.

Employee involvement in the various processes provides a grounding in reality and a check on how well the systems are working.

- A competent and well-resourced regulator able to enforce the regulations effectively.

Regulatory agencies need to be able to pay salaries sufficient to recruit professionally competent staff who understand the hazards of the industries they regulate. This is often

a stumbling block, which some jurisdictions have overcome by using industry levies to fund regulatory agencies, rather than drawing government budgets.

Many countries in the English-speaking world have adopted these principles, in all or in part, for the regulation of hazardous industries. The outstanding exception is the United States, which has remained stuck with a regulatory model from the 1970s which lacks almost all the above features. Following the blowout in the Gulf of Mexico in 2010 which killed 11 men and did incalculable environmental damage, there were loud calls for the United States to catch up with other countries in this respect, but legislative paralysis in Washington makes real change almost impossibly difficult.

This is not to say that regulatory change in other countries has proceeded smoothly. The sad fact is that often change has only been after major accidents. Often it is only the particular jurisdiction in which the accident has occurred that reforms its regulatory regime, while neighbouring jurisdictions fail to act until they have their very own disaster. As Quinlan makes clear, this pattern applies very much to the Australian states and New Zealand, each of which reformed its mine regulations only after its own disaster.

Nevertheless, in jurisdictions in this part of the world that have experienced a mining disaster, the regulatory regimes are now considerably more effective than previously. As Quinlan says, it is probably no coincidence that in the states of NSW and Queensland, where best practice regimes are now to be found, there have been no catastrophic accidents for 16 years. By contrast, there were four in the preceding 16 years, and two in the 8 years before that. A good regulatory regime, it seems, does make a difference.

But as Quinlan points out, this progress cannot be taken for granted. There are always political forces seeking to roll back gains. For example, the federal government's recently launched 'Regulator Performance Framework' is described as an exercise in cutting red tape. This purpose is even embedded in the website address: <http://www.cuttingredtape.gov.au>. The goal of the exercise is also described as 'reducing the burden of regulation'. The vision here is that regulation is a constraint on business rather than a means of protecting the public interest. In such a political climate, regulators can expect to be starved of resources, thus undermining their ability to make a difference.

However, from an even broader perspective, safety has improved greatly over the last 100 years in rich countries, in part because the public is decreasingly tolerant of major accidents. Public inquiries into these accidents almost always reveal a level of negligence that borders on the criminal, which fuels public outrage and the demand that something be done. The long-term improvement in regulatory effectiveness, as Quinlan shows, is partly driven by this public reaction. Countries like China are currently in the position that the rich countries were in a 100 years ago with respect to industrial safety. This is not a matter of national culture, it is a reflection of their level of economic and social development, and we can expect safety to improve as these countries catch up, with one important qualification. China has a totalitarian government that suppresses trade unions and allows no room for the expression of public opinion. It is only if China's social development includes liberalisation in these areas that we can expect to see the evolution in attitudes to safety described here.

Ten Pathways to Death and Disaster is an excellent book. It provides a broad yet detailed account of the causes of major accidents and the regulatory regimes that have been developed to deal with them. Most importantly, it goes beyond individual disaster case studies to generalise about the causes of major accidents. To my knowledge, only one other book has attempted such a challenging task, Barry Turner's *Man-Made Disasters*, published nearly 40 years ago. We now know a lot more about the organisational causes of major accidents. *Ten Pathways* is an invaluable summary of this knowledge.

Robert Scott, *Kenneth Boulding: A Voice Crying in the Wilderness (Great Thinkers in Economics*, ed AP Thirlwall). Palgrave Macmillan: Hampshire, 2015; xvi + 203 pp.: 9781137034373, RRP GBP68.00.

Reviewed by: GC Harcourt, *University of New South Wales, Australia*

Robert Scott has written a superb intellectual (and more) biography of Kenneth Boulding (1910–1993), one of our discipline's most gifted, humane, innovative, original and admirable members. Boulding's biographer gives us in seven chapters and a postscript, in less than 200 pages, a full account of his subject's background, education, career, marriage, publications, and philosophical, political and religious ideals and approaches. He sets out clearly Boulding's approaches and the changes in them over his lifetime of 'doing' economics, taking in carefully Boulding's increasing multi-disciplinary interests, 'big picture' approach and their integration with economic analysis.

Scott includes many quotations from Boulding's professional writings, his wonderful poems, usually sonnets (but Boulding was a past master at jotting down four-line jingles at seminars), his personal diaries and letters. He also has relevant, often moving, quotes from the diaries and poems of 'Bessie' (Boulding's loved and loving mother) and from Elise, Kenneth's much beloved wife of over 50 years – her diaries, professional writings (many of which were written with Kenneth) and letters.

A highlight of the narrative is the affectionate and moving account of the Bouldings' life-long love affair, of how they overcame difficulties and established a loving family of five children and many grandchildren. Kenneth was a person of his times – that is to say, mine – so that most of the detailed tasks of rearing fell to Elise. This affected her professional development for some periods but, thankfully, in the end, she was recognised as an outstanding and respected scholar in her own right. Both Bouldings were deeply committed pacifists and religious people: Quakers. (Boulding initially was a Methodist; his parents were 'loving and devout Methodists', his father was a lay preacher, and 'Boulding committed himself early in life to Christianity' (p. 1).) These ideals permeated all the Bouldings' actions, behaviour and works. This is well witnessed to by the many examples Scott includes in his narrative.

Scott is especially good at setting out the gist of Boulding's principal contributions, the structure of the arguments and the contexts into which they fit. Of course, Boulding was often so far ahead of his time that he *was* the context. All told, Scott's biography is a most distinguished addition to Tony Thirlwall's fine series with Palgrave Macmillan, *Great Thinkers in Economics*, and we are much in his debt for it.