

Julia Black

Learning from Regulatory Disasters

In 2010 an explosion in the Pike River mine in New Zealand killed 29 people, and, on the other side of the world, a blowout at the Macondo oil well killed 11 people and caused major environmental damage as four million barrels of oil spilled into the Gulf of Mexico. In 2005 a cloud of petrol vapour spread over two major motorways early on a Sunday morning after an explosion at the Buncefield storage depot in the South of England, which if it had happened at any other time could have caused significant loss of life. In 2008 the Royal Bank of Scotland (RBS), one of the UK's largest banks, was rescued from collapse by a government bail-out of £46bn, a contributor to and casualty of the global financial crisis. In the 1990s to early 2000s poor New Zealand building

practices led to significant losses for home owners caused by leaky buildings. Estimates of the losses range to as high as \$NZ11.3bn (PricewaterhouseCoopers, 2009).

These disastrous events from opposite sides of the globe seem to be disparate: some are systemic failures across an industry, others are single events; some are low-probability, high-impact events, others high-probability and low-impact if measured as the impact per individual affected at a single point in time, but high-impact if assessed on an aggregate basis across a number of individuals and a period of time. What they have in common is that they are all regulatory disasters: a catastrophic event or series of events which have significantly harmful impacts on the life, health or financial well-being of individuals or the environment, caused, at least in part, by a failure in the design and/or operation

Julia Black is Professor of Law and Pro Director for Research at the London School of Economics and Political Science.

of the regulatory regime put in place to prevent their occurrence.

Regulatory disasters can be a particular form of policy disaster. Policy disasters have been defined as the disastrous unintended consequences which occur as the direct consequence of poor intentional choices by top political decision-makers (Dunleavy, 1995). Regulatory disasters may also be seen as a particularly acute form of a policy blunder. King and Crewe, for example, define a 'policy blunder' as:

an episode in which a government adopts a particular course of action in order to achieve one or more objectives, and as a result largely or wholly of its own mistakes, either

indeed need not be confined to the state at all: they result from the unintended and unforeseen consequences of the design and/or operation of a regulatory system and its interactions with other systems. As such, they can arise from poor decisions by politicians in the design of the regulatory regime and/or political influences on its operation, and/or poor decisions and practices by regulatory officials themselves within a system that may be either well or poorly designed. Regulation, or regulatory governance, is the organised attempt to manage risks or behaviour in order to achieve a publicly-stated objective or set of objectives; a regulatory system consists of the (sometimes shifting) set of interrelated

persuading political overseers of the need for change. Regulatory systems can have a significant number of 'latent' failures which only become apparent on the occurrence of a particular major event, such as explosion or financial collapse, or through the recognition of an accumulation of a number of smaller events, such as individual deaths, smaller-scale pollution events or individual financial losses. These are the disasters 'which are waiting to happen'. Other disasters were not foreseen, but neither may they have been reasonably foreseeable; or they involve 'black swan' events – what had been seen as low-probability albeit high-impact events (Taleb, 2007). Nonetheless, the inquiries that often follow a disaster, even if it is a 'black swan' event, often reveal systemic problems within the regime which have thus far gone unnoticed by regulators, or unheeded by key policy actors.

Analysing the causes and nature of regulatory disasters also enables us to understand more about the nature of regulation itself. Although regulatory disasters often occur in apparently unrelated domains or countries, they can in fact contain lessons for all regulators, for the regulatory regimes share a common set of elements which, through their differential configuration and interaction, create the unique dynamics of that regime. In the regulatory disasters analysed here, these manifest themselves as six contributory causes, operating alone or together:

- the incentives on individuals or groups;
- the organisational dynamics of regulators and regulated operators and the complexity of the regulatory system;
- weaknesses, ambiguities and contradictions in the regulatory strategies adopted;
- misunderstandings of the problem and the potential solutions;
- problems with communication about the conduct expected, or conflicting messages;
- trust and accountability structures.

The article focuses on five distinct and unrelated regulatory disasters: the construction of 'leaky buildings' in New

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fails completely to achieve those objectives or does achieve them but at a totally disproportionate cost, or else does achieve them but contrives at the same time to cause a significant amount of 'collateral damage' in the form of unintended or undesired consequences. (King and Crewe, 2014, p.4)

However, the scale of their consequences means that 'regulatory disasters' are more than just 'policy blunders'. They include disasters caused by 'judgement calls' as well as poor design and implementation, and, as used here, 'regulatory disasters' deliberately excludes 'political disasters' – those that are disasters for the reputation or continued existence in power of the politicians or regulators involved. Many of the regulatory disasters focused on here are also political disasters, but a policy which is purely or mainly a disaster in political terms is not included.

Regulatory disasters are also distinct from policy disasters in that they occur in a particular sub-field of public policy, and

actors who are engaged in such attempts and their interactions with one another and the dynamic institutional and organisational environment in which they sit. Thus, regulatory disasters also differ from public service delivery disasters, as they do not involve the delivery of services to the public directly organised by a government department, agency or authority; or that are provided on behalf of, financed and regulated by government (contrast Dunleavy et al., 2010) unless those disasters arise at least in part from failures in the design and/or operation of the regulatory system to which that public service, such as a hospital, is subject.

Regulatory disasters are horrendous for those affected by them. Because of that, we have an obligation to learn as much from them as we can, notwithstanding all the well-known challenges related to policy and organisational learning. For regulators, probing the reasons for the disaster, even if it occurred in another country, or in a different regulatory domain, can provide insights for the evaluation of their own systems. They can also provide useful leverage for

Zealand in the late 1990s–2000s; the explosion at the Buncefield chemical plant in the UK in 2005; the events leading up to the bail-out of the Royal Bank of Scotland in 2008; the Macondo oil well blowout at the Deepwater Horizon oil rig in the Gulf of Mexico in 2010; and the Pike River mining tragedy in New Zealand, also in 2010.¹ These are chosen because they are uncontroversial examples of regulatory disasters: events having significantly adverse impacts on human health, the financial position or the environment which arose from the design and operation of a regulatory regime intended to manage the very risks which materialised. They also have the advantage that each was subject to extensive investigation by an independent body established specifically to inquire into the causes of the disaster, so providing a wealth of factual information. While there are always inherent biases in any investigation, those which followed each of these disasters has not been significantly criticised as biased or ‘captured’ by any particular interest.

The incentives on individuals or groups

In the aftermath of any disaster there are normally calls from politicians and the public for individual liability to be imposed; for some ‘heads to roll’. However, the role of individuals in causing or contributing to regulatory disasters is not straightforward. In some cases individuals may be a direct cause of a failure: for example, ‘rogue traders’ such as Nick Leeson, whose trading activities brought down Barings Bank in 1995. However, there is a complex interaction between individuals and the organisational context in which they are operating, which make separating out individual action difficult. In the regulatory disasters analysed here, individuals are often the proximate cause, but their actions are only an element in a series of interactions or events contributing to the disaster.

In particular, the organisational context can produce conflicting incentives which affect individual behaviour. The Pike River report found that individuals in the workforce were operating in a context in which production was more important than safety (Royal

Commission on the Pike River Coal Mine Tragedy, 2012 (hereafter Pike River report), p.12). Conflicts of interest can exist within regulators as well as regulated firms. In the case of Deepwater Horizon, regulators were responsible both for awarding licences for deep water drilling and collecting the associated royalties, and for ensuring safety and environmental protections. The drive for royalty income was such that a culture of revenue production dominated safety or environmental concerns, to the extent that some offices developed a practice of taking ‘benefits in kind’ instead of royalties, leading to serious charges of abuse of

both regulators and regulated operators (regulatees) have played a significant role in all the regulatory disasters analysed here, as have the dynamics of the interrelationships between them. The internal dynamics of organisations are in turn affected by their broader institutional context. For firms this is usually the markets in which they are operating. For regulators it comprises principally their legal mandate and powers, their governance and accountability structures, the political context and their informal and formal relationships with other regulatory actors.

That context can drive organisational

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government authority and even criminal misconduct (National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling (2011) (hereafter Deepwater Horizon report), p.77).² In addition, individual pay and reward schemes were linked to the speed with which officials issued licences, distorting balanced decision-making, particularly with respect to environmental impacts. (ibid., p.82). As many regulatory activities are performed through individuals, it is not surprising that the decisions, actions and inactions of individuals play a role in producing regulatory disasters. But to focus on individuals alone is to miss the significance of how their actions are governed by and interact with the broader organisational and institutional context in which they are situated.

Organisational dynamics, institutional context and system complexity

Organisations are mechanisms which translate individual actions into collective action by enabling them to be sustained over time (Reed, 2003). The organisational systems, processes and dynamics of

dynamics and priorities in direct ways. In the case of Pike River, for example, the report found that while the ‘drive for production’ was a normal feature of coal mining, Pike River was in a particularly stressed economic situation as the company was in ‘start up’ mode: it had only one mine, which was producing far less than had been forecast, and it was seeking to gain market credibility in order to raise capital (Pike River report, p.12). In such circumstances, directors and executive managers paid insufficient attention to health and safety risks. The market context can also have a systemic effect across an industry, with significant implications for how a regulatory regime operates in practice. For example, in the case of New Zealand’s ‘leaky buildings’ disaster, the Hunn report found that skill levels in the building sector had been declining, and that the changing practices within the market meant that builders were no longer overseen by professionals, such as surveyors and architects, as they had been in the past (Hunn, 2002, p.9).

For regulators, it is the political and legal context which has most bearing on

their organisational structures, processes and decision-making. Often the legal mandate and powers that regulators have is deficient in one or more ways. In the case of Pike River, the legal framework for health and safety regulation was criticised as too fragmented: those who issued licences to mine were not mandated to look at health and safety, so licences to mine were given without any scrutiny of health and safety. The regime may not include all of the risks that the activity poses: in the case of the Buncefield explosion, the report found that under the UK regulatory regime, societal risks (such as to the health and safety of those

regulatory disasters arising from the extraction industry (mining, oil drilling) that the conflicts of interest created by the government's interests in mining or drilling for natural resources can override its role in preserving the environment or making decisions about health and safety (Pike River report, vol.2, p.267; Deepwater Horizon report, p.72).

Legislators also impose a business model on regulators through their decisions on funding. Those funded directly from government are prey to cuts in resources, which has an obvious impact on their ability to perform their role.³ The report to the president on Deepwater

on how the regulator interprets its mandate and uses its powers. In the case of the MMS, it tried more than once to amend the regulatory provisions to introduce the requirement for a safety case and other reforms, but was continually blocked by industry, Congress and the Office of Management and Budget (Deepwater Horizon report, pp.71-3). In the case of leaky buildings, the Hunn report stated that: 'Some territorial authorities and building certifiers hold the view that the certification process is constrained by a desire expressed by the BIA [Building Industry Authority] to building officials that any change to the process must avoid putting inflationary pressure on building costs.' Overall, it concluded that political 'influence may be compromising standards' (Hunn report, p.19). In the UK, although the Financial Services Authority (FSA) had a broad legal mandate and a wide set of powers to regulate banks and other financial institutions, the report into the failure of the Royal Bank of Scotland found that the FSA had felt constrained from intervening too closely in RBS's business model by politicians' ambitions to preserve the City of London's position as an international financial centre (FSA, 2011, p.262). In the United States, royalty income from oil exploration was a highly lucrative source of revenue;⁴ in such a context, industry's voice was allowed to frustrate attempts by the MMS to enhance regulation of their activities and the agency was never granted the political autonomy to resist them (Deepwater Horizon report, ch.3).

While the political and legal context has a role to play in shaping organisational processes, cultures and decision-making, a striking feature of all the regulatory disasters analysed here is the central role played by failures of governance and leadership within organisations, in both regulators and regulated firms. Critical are the skills and training of personnel, the resources of the organisation, weaknesses in leadership, and governance, including failures to manage risks strategically. Also striking are the consistent failures of organisations, particularly regulatory organisations, to coordinate in the operation of the regulatory system,

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living in the vicinity of the site) were not taken into account in the land use and planning decisions made with respect to high-hazard sites. The legal mandate may also be such that it creates significant conflicts of interest for the regulator. In the case of the Deepwater Horizon disaster, the Minerals Management Service (MMS) was responsible for licensing and collecting royalties and for environmental and health and safety regulation, and operated in a political context in which oil exploration, and preserving the royalties from that exploration, were the dominant concerns (Deepwater Horizon report, ch.3). Conflicting incentives and objectives in legal mandates often stem from the political compromises brokered between conflicting parties which are then embodied in the governing legislation. As the report to the president noted, 'From birth, MMS had a built-in incentive to promote offshore drilling in sharp tension with its mandate to ensure safe drilling and environmental protection' (ibid., p.56). Furthermore, governments themselves can have vested interests which conflict with other goals: it is a notable theme throughout the

Horizon concluded that the MMS had to pursue safety regulation on a 'starvation diet' due to Congress's unwillingness to grant it appropriate resources (Deepwater Horizon report, p.72). In the case of Pike River, the government had reduced funding to the inspectorate and merged it with the broader Department of Labour. As a result, there were only two mining inspectors for the whole of New Zealand. But business models can be imposed in other ways. Both environmental and health and safety regulators in the UK, for example, are under a legal requirement to recover the costs of their inspections. The report into the Buncefield explosion found that the legal requirement to recover costs 'can have an unwanted effect upon regulatory activities and the relationship between the [regulators] and duty-holders' and 'induce tensions in the relationship with site operators' (Buncefield Major Incident Investigation Board, 2012 (hereafter Buncefield report), p.66).

Even where the legal mandate is clear and a regulator has a full range of powers, the political context and accountability structures can have a significant impact

failures which are exacerbated the more complex the system.

With respect to internal failings of organisations, there are four central findings which are common to both regulators and regulated operators.

First, and most obviously, culture matters. Organisations are internally complex and informal norms often dominate formal rules in the way activities are carried out and decisions are made. As a result, safety rules can be overridden when employees think they are unnecessary, as in Pike River (Pike River report, p.19). Or the culture drives decisions. In the case of the MMS, for example, environmental scientists within MMS stated that their managers believed that all environmental impact assessments should result in a 'green light' for drilling (Deepwater Horizon report, p.82).

Secondly, the training, skills and expertise of personnel matters: organisations may simply lack people with appropriate expertise. This is a common feature in all the disasters, but it is notable that lack of training and expertise is often a more striking feature of regulators than it is of regulatees. This is frequently due to resources: disparities in pay between the regulator and industry, which makes recruitment difficult (see, for example, Pike River report, pp.29, vol.2, 274-5; FSA, 2011, p.24). However, it can also be because those at the top of the organisation do not value specialist expertise, as in the case of the MMS in the United States (Deepwater Horizon report, pp.77-8). Alternatively, organisations may have the expertise but those experts are not called upon to look at the appropriate problems, as in the case of the supervision of major hazard chemical sites in the UK, where environmental specialists were not called on at the appropriate times. The Buncefield investigation also found that experts from different disciplines can find it difficult to work together productively, and specialists may have little empathy or time for generalists, all of which can lead to conflicts over priorities and oversights (Buncefield report, p.30). In contrast, generalists may disregard the calls for resources made by specialists, as they cannot see the need for them. The impact this has depends on where the expert or

generalist is within the organisation: one feature of Pike River was that the line managers were generalists and so did not understand how to inspect mines, even limiting the travel budgets of the inspectors to inspect mines in the North Island on the basis that the resources came out of the South Island budget (Pike River report, vol.2, p.277).

Thirdly, organisational failures usually come from the top. A central finding is the failure of leadership, in both regulators and regulated firms. For example, in the case of Pike River the investigation found that 'The board did not provide effective health and safety leadership and protect

into the generalist health and safety inspectorate, which was itself part of a much larger Department of Labour, meant that the department did not focus sufficiently on health and safety issues (Pike River report, p.29).

Fourthly, organisations often take the path of least resistance, and as a result can fail to manage risks strategically. In the case of major hazard regulation (which for these purposes is taken to include financial supervision of systemically important banks), attention can focus more on the events that are 'happening here and now' than on risks that events 'may happen in the future'. The board

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the workforce from harm' (Pike River report, p.18; see also Hutter, 2001). The necessary information simply was lost as issues moved up the organisation, and as a result the board could not assess or challenge assurances that had been given to it by management. An analysis of the failures of the boards of financial institutions in the wake of the financial crisis found exactly the same (Senior Supervisors Group, 2009; OECD, 2009). Boards can also be distracted: in the case of Pike River the board was distracted by the financial and production pressures that confronted the company; in the case of RBS, by the gains to be made from the activities it was pursuing. Regulators can be equally distracted: in the case of the FSA, the board had focused most of its attention on dealing with legacy issues from the previous regime, and on retail and insurance regulation. Analysis of board minutes for the years leading up to RBS's rescue found that the board had devoted very little time to considering prudential regulation issues (FSA, 2011, p.266). In the case of Pike River, the absorption of the mining inspectorate

report into the supervision of RBS found that the board focused more on legacy issues and retail mis-selling which demanded immediate attention, and as a result did not pay attention to prudential risks, which were seen to be remote. In the context of more traditional major hazard industries, the Buncefield report provided a useful reminder that

Previous major incidents around the world such as Texas City, Longford (SE Australia) and Piper Alpha remind us that the task of controlling major hazard risks can become insidiously subverted by undue attention being paid to the less organisationally demanding issues of occupational safety. (recommendation 22)

This is not a problem confined to regulators: in the case of both RBS and BP, neither focused adequately on high-impact, low-probability events (Deepwater Horizon report; FSA, 2011; and see House of Commons Energy and Climate Committee, 2010, para 33).

The complexity of the regulatory system can also be a key contributory element. In any regulatory system, multiple regulators will often have to interact, but for varying reasons fail to do so effectively, or even at all. As a result, inter-organisational failures between regulators can be as significant as internal failures in regulators and regulatees in contributing to regulatory disasters. For example, in the case of Pike River the investigation found that each regulator involved interpreted its mandate narrowly and did not share information with

its assessment of the site, delaying the ability of the environment regulator to ask the firm to address particular issues. Although there was a memorandum of understanding in place between the two regulators, there was 'scant compliance' with it. Software incompatibility inhibited data sharing, and communication was 'more a case of "copying in" colleagues in the other agency than proactive liaison'. Very commonly, there is also a lack of clarity about which agency has lead responsibility for which issues (Buncefield report, paras 55, 72, 99, 124-5).

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the other agencies involved (Pike River report, vol.2, p.268). In the case of leaky buildings, the Hunn report found that split responsibilities for approving building consents and issuing certificates led to confusion about roles, responsibilities and processes (Hunn report, p.23). In the case of Deepwater Horizon, the overlapping jurisdictions of the MMS and the United States Coastguard led to a requirement to continually renegotiate informal inter-agency agreements over an extended period and in effect expand the MMS's jurisdiction, contributing to its under-resourcing (Deepwater Horizon report, p.76).

Furthermore, the different mandates of regulators may lead them to have differential priorities, which is a problem when they are meant to be jointly regulating the same site or activity, particularly where each is operating a risk-based system for allocating inspection resources. For example, in the case of Buncefield, the site had a lower priority for the Health and Safety Executive (HSE) than it did for the Environment Agency. As a result, the HSE was slow to complete

Finally, failures in oversight can contribute to the difficulties of system management: regulators can be subject to performance or accountability measures which impose conflicting priorities on them, as with the MMS, or which are incapable of identifying weaknesses as the regulator lacks the expertise to do so, as in the case of Pike River, or does not see it as their role, as in the case of the Building Industry Authority.

Regulatory strategies and techniques

At the outset, regulatory disasters were differentiated from more general policy disasters as they involved the failure of a regulatory regime to manage the behaviour or risks the regime was created to manage in order to achieve a broadly-defined goal or set of goals. A wide array of regulatory techniques can be used to achieve those goals, each with its own strengths and vulnerabilities. Each of the failures involved a different regulatory technique. In the case of Deepwater Horizon, regulation was highly prescriptive and expressed in legislation. Although the regulator had pressed Congress to revise

the legislation to bring it up to date, this had not occurred. As a result, the deep-water drilling techniques that the industry was using were in effect unregulated, as they were simply not covered by the relevant legislation (Deepwater Horizon report, pp.71, 75). In the aftermath of the disaster the US government agreed to adopt a system akin to that used in Norway and the UK, often referred to as 'enforced self-regulation' or management-based regulation. In such systems, the safety systems and processes are not prescribed in legislation; rather, the legislation sets an overall objective, such as 'a safe system of work', and the duty holder has to present its 'safety case' to the regulator for approval, setting out how it proposes to achieve that objective. This system was introduced in the UK as a result of the Robens Report in 1972 (Robens, 1972), and forms the basis of New Zealand's health and safety regulation.⁵ It was widely praised by the US commission investigating the Deepwater Horizon disaster as the best system to use, and has since been adopted there. The UK also reassured itself of the strength of the regime in a parliamentary review of the regulation of offshore drilling in the UK in the wake of Deepwater Horizon, set up to see what lessons, if any, could be learned from it for the UK (House of Commons Energy and Climate Change Committee, 2010).

However, any strategy has an Achilles heel. One of the striking things about the regulatory failures relating to the supervision of banks and financial markets in the UK, and mines and buildings in New Zealand, is that each was an example, at least from a distance, of a textbook case of 'new regulatory governance' techniques (on the UK system see Black, 2012). Management-based regulation was used in the case of both the regulation of the mining industry in New Zealand, and the regulation and supervision of RBS (and other banks) in the UK. In the case of New Zealand, however, the Pike River commission argued that in translating the UK system for health and safety regulation to the New Zealand context, New Zealand implemented a 'light' version of the system which gave flexibility by focusing on the objectives to be achieved, but failed to supplement

this with sufficient guidance or even prescription as to the minimum standards necessary, or sufficient engagement of the workforce in compiling the safety case (Pike River report, vol.2, p.252; see also Independent Taskforce on Workplace Health and Safety, 2013). Management-based regulation works well where management's incentives are sufficiently aligned with the regulators' goals; however, as the FSA's supervision of RBS showed, where they are not so aligned the technique is vulnerable to failure.

In the case of the building and mining industries, New Zealand also pulled back from prescribing products or processes in favour of setting performance standards, more often referred to in the UK context as 'outcomes-focused' regulation. This strategy involves removing a great deal of prescription from the rules, while setting overall goals to be achieved. The Pike River report found that in getting rid of those provisions, the regulatory system lost what might be termed its 'institutional memory'. It commented: 'The special rules and safeguards applicable to mining contained in the old law, based on many years of hard-won experience from past tragedies, were swept away by the new legislation, leaving mining operators and mining inspectors in limbo' (Pike River report, p.32). Performance-based or outcomes-focused regulation places significant demands on both regulators' and regulatees' judgement and expertise. However, complex systems of detailed rules can be just as demanding to implement, and have the additional disadvantage of becoming easily outdated, as in the case of the regulatory regime for deep-water drilling in the US. These contrasting examples highlight the care that has to be taken in designing a rules-based system, to ensure that there is the right combination of principles or outcomes-focused norms and sufficient 'scaffolding' through more detailed guidance provisions to indicate to firms how to comply and assure themselves and regulators that they have done so (Black, 2008).

A less commented-on regulatory technique, at least in the academic literature, is the art of monitoring and inspection. While there is considerable

research on how to get regulated operators to comply with regulation, there is far less on how regulators can assure themselves, and others, that operators are or are not complying. However, a common feature across all the cases studied is poor monitoring strategies. In the case of Pike River, for example, inspections were on-site, but did not involve wider audits of systems and processes, or assessments of the firm's culture. In the case of RBS, in contrast, oversight focused too much on systems and processes and not enough on the business model. It was also partial, focusing on some areas of risk, mainly

regulatory disasters as it does to any other problem.

Knowledge, ideas and understandings are critical in the context of risk regulation. As noted above, operational drivers can be such that risks that are known but considered low-probability, albeit high-impact, are ignored, not because they are not known about but because a combination of assumptions about probabilities, understandings of impact and operational drivers means they are not prioritised for attention.

More problematic, perhaps, are the risks which are not known about. Low

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retail operations where there were known concerns, but not others, notably capital adequacy, where the risks were seen as more remote (and where the supervisors had less experience) (FSA, 2011, p.242). Similarly, in Buncefield, the regulators were criticised for focusing on known defects rather than taking a strategic review of all the control measures in place, and focusing on lagging rather than leading indicators. The report recommended that there should be a 'clear line of sight' between the inspection plans and the strategic outcome sought' (Buncefield report, para 97, recommendation 6).

Knowledge, ideas and understandings

Regulation is a problem-based activity: 'society' in some form decides there is a problem, or that there is a risk of a problem in the future, and policy makers and regulators devise ways to address that problem. But how we identify something as a problem is contingent on what we value (and therefore what we think is under threat), and how we analyse problems and create solutions for them is contingent on our knowledge and understanding of the world and our ideas of how it operates. This applies to our understandings of

risks, in particular, may escape attention both in the design of the regulatory regime or its operation because their cumulative impact is not known, or at least not recognised in that particular regulatory regime. For example, the Buncefield report found that the UK's regime for major hazard regulation of chemical sites did not cover low risks which may have an incremental impact. Nor did it recognise societal risks, i.e. risks to those living near the site, as opposed to those working on it (ibid., paras 146-7). While the report recommended that planning decisions should take account of societal risk, and the HSE is working on technical guidance on the issue, the UK government has yet to introduce such a requirement.⁶ Some risks are just unknown, however. The explosion at Buncefield, for example, was a consequence of the ignition of a large cloud of vapour which was formed during the loss of petrol from a storage tank. The circumstances which led to the release of the vapour were predictable, but the consequences were not. The vapour release generated much higher pressures than would normally have been expected from a vapour cloud explosion, and exactly how or why the chemical reaction

occurred was still unknown at the end of the investigation (ibid., paras 19, 32, 51). Similarly, in the case of RBS, and indeed with respect to the global financial crisis more broadly, assumptions that had been made as to how markets would react in particular scenarios proved significantly misplaced, with risk events that had been anticipated to occur once in several lives of the universe occurring every day. In this case the causes were social rather than chemical, and it is a moot issue as to whether they could have been predicted had different modelling techniques, and a different understanding of markets,

account 'economic growth' in the exercise of their functions.⁷

Relationships with regulatees may also become over-trusting, though this is always a difficult issue to manage in practice. Regulators may have long-standing relationships with certain regulated firms, particularly large-scale operators who are geographically fixed (mining operators, in contrast to container ships, for example). Much research has found that regulators, either deliberately or less consciously, seek to build cooperative relationships with regulatees, and only to escalate enforcement action in response

07, notwithstanding that relationships had in the past been highly fractious. In its report into the failure of RBS the review team declared that the concept of a regulatory dividend was 'flawed' and 'potentially dangerous'. It rewarded firms with less intensive supervision if they could demonstrate effective controls and displayed a degree of cooperation with the FSA 'that ought to have been a non-negotiable minimum'. It is worth noting that 'trust' may be resource-driven, however: the report also noted that the dividend may also have been awarded to enable supervisors to manage conflicting pressures with limited resources (FSA, 2011, pp.257, 252).

Although the analysis here examines each element in isolation, in reality each element interacts with the others to produce the unique dynamics of any regulatory regime.

been used. Nonetheless, we cannot always manage uncertainty: we cannot always prevent disasters arising from risks that we know exist but about which we do not have full knowledge; nor can we manage risks that we do not know about at all.

Communication and trust

Finally, the last elements of regulatory regimes which play a role in contributing to disasters lie in the communication and trust (or lack thereof) that exist between regulators themselves, and between regulators and those they regulate. Across the regime, different regulatory actors may send conflicting messages as to its goals. The Hunn report found, for example, that the foreword to the guidance on compliance with the Building Act stated that the aim of the act was to 'minimise compliance costs', but it was unclear whether this related to the administrative costs of compliance or to the overall cost of design and construction compliance (Hunn report, p.18). This is a particularly pertinent observation for the UK, which has recently introduced a requirement for non-economic regulators to take into

to the attitude of the regulatee and/or the scale of the incident (Ayres and Braithwaite, 1992). Although the US is often distinguished from other countries in this regard, it is worth noting that relationships between the MMS and the operators were also close, in some cases overly so (Deepwater Horizon report, p.77). In all the examples analysed here, the reports criticised the regulators for being insufficiently interrogative of the information given to them by firms, too slow to take action once problems were identified, or not having set out clearly when more formal action would be taken (Buncefield report, para 95; Hunn report, p.21).

In the case of RBS, regulators were simply too trusting. From mid-2006 onwards the FSA's supervisors assessed firms against criteria relating to their management and controls, and whether they had dealt openly with the FSA. On the basis of these assessments it decided whether, and to what extent, a firm could benefit from a 'regulatory dividend'. The Royal Bank of Scotland was given a regulatory dividend in 2006–

Regulatory dynamics and potential points of failure

Although the analysis here examines each element in isolation, in reality each element interacts with the others to produce the unique dynamics of any regulatory regime. But while each disaster is in many ways distinct, there are some common sources of failure which are observable irrespective of the domain being regulated. In fact, the points of failure are depressingly familiar, and, most importantly, are common to both regulators and regulated operators. Within organisations these are most often inadequate training and skills of front-line staff; conflicting incentives, or incentives which conflict with the goals of the regulatory regime; and poor leadership and management oversight. In addition poor internal coordination and communication, for example between different types of experts, and weak coordination between the different regulators charged with managing the system are all too common.

The disasters also illustrate the particular points of weakness of different regulatory techniques. For example, prescriptive regulation can quickly become outdated, but performance-based or outcomes-focused regimes require a supporting scaffolding of guidance. Management-based techniques need to ensure that the goals of the regulator really are embedded in firms. In industries characterised by low-probability, high-impact events, they show that firms and regulators need to take care not to be

overly distracted with managing the high-probability, low-impact events which are happening here and now. All the disasters also illustrate the need for consistent communication, and the importance, and difficulty, of managing trust within and of the regulatory regime as a whole.

In sum, they illustrate that regulators have to be aware of and respond to limitations of the capacity and attitude of regulated firms; the weaknesses of their own organisational structures and processes; the pressures imposed by the market, legal and political context in which the regime is operating; the potential points of failure in the regulatory techniques being used; knowledge and understandings of risks and markets; the role of communication and trust throughout the regime; and changes

in each of these (Baldwin and Black, 2008). The analysis also suggests where those who oversee regulators should be looking for potential points of failure; and points to the varying ability that even independent regulators may possess to counter the pressures that politicians can place on them. But above all it shows that we need to learn from disasters, wherever they happen around the world. In doing so we will not prevent them from happening again, but we could reduce their likelihood.

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- 1 Note that the lecture on which this article is based also included examples from the Mid-Staffordshire hospital inquiry in the UK, but this is omitted here for reasons of space. See Report of the Mid Staffordshire NHS Foundation Trust Public Inquiry (2013) HC947.
 - 2 For a full discussion of the regulatory environment see chapter 3.
 - 3 See Deepwater Horizon report, chapter 3, for a discussion of the depletions of the MMS's resources.
 - 4 At the time the MMS was created royalties for oil drilling

- 5 See <http://www.mbie.govt.nz/pdf-library/what-we-do/workplace-health-and-safety-reform/effective-regulatory-framework.pdf>.
- 6 <http://www.hse.gov.uk/landuseplanning/societalrisk.htm>.
- 7 Deregulation Bill 2014, clause 61.

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References

- Ayres, I. and J. Braithwaite (1992) *Really Responsive Regulation*, Oxford: Oxford University Press
- Baldwin, R. and J. Black (2008) 'Really responsive regulation', *Modern Law Review*, 71 (1), pp.59-94
- Black, J. (2008) 'Forms and paradoxes of principles based regulation', *Capital Markets Law Journal*, 3 (4), available at <http://eprints.lse.ac.uk/23103/1/WPS2008-13.pdf>
- Black, J. (2012) 'Paradoxes and failures: "new governance" techniques and the financial crisis', *Modern Law Review*, 75 (6), pp.1037-63
- Buncefield Major Incident Investigation Board (2012) *The Report of the Buncefield Major Incident Investigation Board into the Policy and Procedures of the Health and Safety Executive's and the Environment Agency's role in regulating the activities on the Buncefield site under COMAH Regulations*, London
- Dunleavy, P. (1995) 'Policy disasters: explaining the UK's record', *Public Policy and Administration*, 10 (2), pp.52-70
- Dunleavy, P., J. Tinkler, C. Gilson and E. Towers (2010) 'Understanding and preventing public service policy disasters', LSE Public Policy Group, available at <http://www.academia.edu/2871538/>
- FSA (2011) *The Failure of the Royal Bank of Scotland: Financial Services Authority Board report*, London: Financial Services Authority
- House of Commons Energy and Climate Change Committee (2010) *UK Deepwater Drilling: implications of the Gulf of Mexico oil spill*, HC 450-I, London: Stationery office
- Hunn, D. (2002) *Report of the Overview Group on the Weathertightness of Buildings to the Building Industry Authority*, Wellington
- Hutter, B. (2001) *Regulation and Risk: occupational health and safety on the railways*, Oxford: Oxford University Press
- Independent Taskforce on Workplace Health and Safety (2013) *Report of the Independent Taskforce on Workplace Health and Safety in New Zealand*, Wellington
- King, A. and I. Crewe (2014) *The Blunders of Our Governments*, London: Oneworld
- National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling (2011) *Deepwater: the gulf oil disaster and the future of offshore drilling, report to the president*
- OECD (2009) *Corporate Governance and the Financial Crisis: key findings and main messages*, Paris: OECD
- PricewaterhouseCoopers (2009) *Weathertightness: estimating the cost*, Wellington: Department of Building and Housing, <http://www.dbh.govt.nz/UserFiles/File/News/WHRS/pdf/PWC-weathertightness-estimating-cost-full-report.pdf>
- Reed, M. (2003) 'The agency/structure dilemma in organization theory: open doors and brick walls', in C. Knudsen and H. Tsoukas (eds), *The Oxford Handbook on Organization Theory*, Oxford: Oxford University Press
- Robens, Lord (1972) *Committee on Safety and Health at Work: report of the committee*, London: Stationery Office
- Royal Commission on the Pike River Coal Mine Tragedy (2012) *Royal Commission on the Pike River Coal Mine Tragedy*, volume 1, Wellington
- Senior Supervisors Group (2008) *Risk Management Lessons from the Global Banking Crisis of 2008*
- Taleb, N. (2007), *Black Swan: the impact of the highly improbable*, London: Penguin