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Achieving a Step Change
the Holy Grail of Outcomes-based Management

In 2011 public sector management is at a crossroads, without a clear way ahead. Politicians in New Zealand and comparable jurisdictions, such as Australia (Advisory Group on the Review of Australian Government Administration, 2010), are searching for new thinking on how to improve public sector performance. Some practitioners have responded by seeking to repackage long-standing ideas in an effort to extract improved performance from existing systems. In New Zealand, different governments have introduced marginal, piecemeal additions to the current system. Most recently additions have focused on improving the economy of departmental operations (Better Administrative and Support Services (BASS); shared services) and filling gaps (Performance Improvement Framework (PIF)). The piecemeal nature of these initiatives means they are unlikely to significantly improve the effectiveness of performance and the overall coherence of the public management system.

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Meanwhile, academics pronounce the 'death' of new public management (Dunleavy et al., 2006) and foresee the emergence of 'new public governance' (Osborne, 2006), though without a consensus as to what new public governance actually means. Other, more reflective practitioners are searching for a new 'synthesis' (Bourgon, 2008), but what needs to be synthesised or what the direction for any change should be is not yet clear (Lindquist, 2011).

In the past New Zealand has shown an ability to forge ahead with path-breaking public sector reform. It was the first country to introduce output-based budgeting and accrual accounting in the public sector. Yet over the last 20 years we have failed in our attempts to move from a dominant outputs-based to a more outcome-focused management system (Gill, 2008). Recent research on organisational performance in the state sector found that, with some notable exceptions, as a general rule public organisations were tactically managing resources through processes to deliver outputs with a varying focus on outcomes (Gill, 2011, ch.16). In short, in New Zealand public organisations are reporting for outcomes not managing for outcomes.

This article suggests that the time is right for New Zealand to commit to moving to a greater formal use of outcome-focused management.[1] There are a number of reasons to do so:

- outcomes build on the professional pride and basic motivation of public sector employees who come to work in order to make a difference to the lives of ordinary New Zealanders;
- New Zealand faces a sustained fiscal affordability problem that cannot be addressed by searching for economies in existing operations of public agencies (see discussion in Gill et al., 2010, pp.34-5, which draws on Treasury's 2009 long-term fiscal statement);
- we have the opportunity to learn from the experimentation under way elsewhere ('necessity is the mother of invention') in the face of fiscal pressures, and the experiences of other leading jurisdictions (such as Oregon) that have sustained a focus on achieving outcomes.

Strategies to achieve a step change

We propose in this article a number of possible strategies for improving the outcomes focus of public organisations and thus improving state sector performance. We do not propose one best way. Instead, we present five alternative, broad-based strategies that differ in the source of leadership on outcomes – chief executives and senior leaders within departments, ministers or independent goal-setters – and the relative emphasis placed on outputs compared to outcomes and thus improving state sector performance.

There are also areas for change that could, indeed should, be implemented as part of or alongside all of the stategies discussed in this article. Such 'common strands' are aimed at increasing the contribution of organisational performance information to improved public sector performance by moving away from the one-size-fits-all approach that was adopted in the implementation of the formal system. Common strands address increasing the leadership provided by agencies at the centre; improving output specification and clarity of appropriations; more closely examining longer-term outcome trends and strengthening the use of an evalutative lens; allowing variation in the frequency and focus of external reporting and audit requirementts; facilitating external analysis of organisational performance data; and strengthening incentives at the chief executive.

We set out alternative strategies in order to bring out the often unarticulated assumptions that are made about what stops public organisations from becoming more outcomes-focused. Some of the options propose managerial solutions, such as using performance standards to control the exercise of delegated authority. The thrust of these strategies is to change aspects of the formal performance management system design in order to reinforce the desired changes in practice within the state sector. They are all, however,

Table 1: Strategy 1, outcomes leadership at service and policy levels

Dimensions		Elements	
Purpose	External organisational accountability	*Objective-setting* – how	Led by chief executive
Locus	Individual agency	*Organisational performance information and development* – where the emphasis lies	Focus kept on outputs Focus on agency outcomes de-emphasised
Focus	Outputs	*Monitoring* – where and how performance information is monitored	Service performance information used in chief executives' performance reviews and linked to remuneration
Scope	Comprehensive outputs reporting, with reduced emphasis on outcomes	*Performance information reporting* – where and how performance information is reported	Quality of output performance information improved and requirement for outcome information reduced
		Decision rights – where they are assigned	Formal decision rights of ministers strengthened

Table 2: Strategy 2, chief executives leading outcomes

Dimensions		Elements	
Purpose	Decision-making (including priority setting and resource allocation)	*Objective-setting* – how	Outcome development led by chief executive
Locus	Clusters of agency activities contributing to specific outcome areas	*Organisational performance information and development* – where the emphasis lies	Sector and high-level outcomes and organisational outcomes hierarchies
Focus	Outcomes, with contributions from multiple agencies	*Monitoring* – where and how performance information is monitored	Contribution to collective used in chief executive performance reviews
Scope	Outcomes, high-level and organisation-specific, with reference to outputs / other interventions	*Performance information reporting* – where and how performance information is reported	No additional external reporting, some reduced output reporting
		Decision rights – where they are assigned	Role of chief executives in intervention selection strengthened

essentially technical solutions that take as given the authorising environment created by New Zealand's Westminster – and mixed-member proportional – system of government. In particular, they take as given Ladley's 'iron rule of politics' that the opposition, in undertaking its constitutional role, uses performance information 'not to improve the functioning of the Executive but in order to attack the Executive' (Prebble, 2010, p.3).

An authorising environment dominated by Ladley's iron rule of politics will affect the way performance measures are developed, used and reported in public organisations. Managerial solutions cannot, by themselves, address what are principally political problems –they will not take the politics out of politics.

Strategy 1: outcomes leadership at the service and policy levels

Strategy 1 builds on the firm foundation of output-based management already established in New Zealand by de-emphasising and removing outcomes from service performance reporting, and uncoupling outcomes from the iron rule of political contest. Under this strategy, the Public Finance Act 1989 would be amended to remove statutory references to outcomes. The locus of performance information reporting would remain individual agencies and the purpose would remain external accountability (see Table 1 for more details). Having removed outcomes from accountability, the focus on outcomes under this strategy is more as a bottom-up organisational learning tool at the client service level, and for informing high-quality policy.

Strategy 1 recognises that the imperative for control remains dominant in the face of the requirements of an authorising environment dominated by the 'iron rule of political contest', and shifts outcomes from the accountability space. The key to the success of the strategy is creating space to explore outcomes by decoupling outcomes from the blame game of accountability and making accountability more meaningful.

The strategy, which we call 'building on the basics around outputs', works within the constraints of the authorising environment and constitutional requirements, particularly with respect to Parliament's role in authorising ministers to incur expenditure through their departments. From a political perspective, attempting to make the reforms of 20 years ago work is a 'realist' strategy, in that it recognises the day-to-day operation of the authorising environment and the iron rule of political contest.

The strategy involves modifying the formal system to make it more consistent with practice. In so doing and to achieve a step change, this strategy returns to aspects of those reforms as originally contemplated, with a strong leaning towards high-powered incentives, such as the retention by departments of surpluses and the review of chief executive performance based on organisational performance. In keeping with its political realism, the strategy does not, however, return to notions such as ministers as active purchasers of the goods and services provided by departments (and others).

The next three strategies take a different tack, as they all involve putting outcomes on centre stage by focusing on strengthening leadership around outcomes, in the current authorising environment. This responds to two complementary facets of observed practice:

- limited involvement of ministers in setting outcomes, and outright resistance to outcome targets, which have resulted in an absence of shared strategy and priorities (context) for shaping departmental operations;
- the frequency of a compliance-focused approach to outcome (and output) reporting by departments, to the detriment of both meaningful accountability and organisational learning.

In a sense, the next three strategies are variants on the same broad approach which differ depending on whether leadership on outcomes comes from chief executives and senior leaders, ministers and chief executives jointly, or ministers.

The final strategy, starts from the position that accountability for performance requires change in the 'two cultures' of the political world (ministers and Parliament) and the managerial world (public officials) (Prebble, 2010., p.50).

Strategy 2: chief executives leading outcomes

Strategy 2 involves chief executives leading outcomes, with the recommended approach to performance reporting placing a greater emphasis on cross-agency outcomes and a reduced emphasis on output-class information at an individual agency level. Organisational performance would become increasingly selective and differentiated by being tailored to different decision makers. Thus, the focus would shift to selected outcomes (with the locus of attention across agencies) and the purpose would shift to learning and internal decision making (see Table 2).

This strategy is based on the view that underpinning the lack of sustained progress on responsibility for outcomes is political constraint. It appears that New Zealand politicians are reluctant to commit themselves to specific measurable targets because they believe they could be 'held hostage to fortune'.[2] This option would reinforce current joint working among chief executives and their staff (discussed in a March 2010 Cabinet paper) such as the community links programme (integrated tax and social assistance), and joint border sector governance.

This approach builds on the professional pride senior public sector leaders have in wanting to make a difference despite the somewhat hostile authorising environment. The determinant of success will be chief executive leadership, augmented by astute support from the central agencies. Selected chief executives would develop high-level outcomes and cross-organisational interventions,[3] with all chief executives integrating those outcomes and interventions into the planning and priority-setting for their respective organisations. This approach would involve chief executives leading the development of end-to-end solutions for particular public policy problems, including acting as champions for particular management issues, such as measurement, organisational learning and evaluation.

Table 3: Strategy 3, joint leadership of outcomes

Dimensions		Elements	
Purpose	Decision-making (including priority-setting and resource allocation)	*Objective setting* – how	Joint ministerial–chief executive leadership of strategic management system focused on high-level outcomes
Locus	Clusters of individual agencies' activities contributing to priority outcomes	*Organisational performance information and development* – where the emphasis lies	Cascade from government outcomes to agency outcomes
Focus	Selected priority outcomes and activities	*Monitoring* – where and how performance information is monitored	Information on intervention (and delivery approach) selection and use of evidence used in chief executive performance reviews
Scope	Selective outcome reporting, with reduced emphasis on and variability in outputs reporting	*Performance information reporting* – where and how performance information is reported	Contribution to agency outcomes the focus
		Decision rights – where they are assigned	Formal steering role of ministers strengthened

Strategy 3: joint leadership of outcomes

This strategy involves establishing a strategic management system as the centrepiece for the organisational performance management system. In summary, this approach to improving performance reporting builds on the government's policy priority-setting process and cascades this down through sector-level outcome information and into individual public agencies.

There would be reduced emphasis on comprehensive reporting of performance information at an individual agency level and greater focus on sector-level achievements. Perfromance reporting would become increasingly selective, focused on societal outcomes and strategic priorities, (with inevitable cross-agency boundaries) and be tailored to different decision makers (see table 3). To be effective, this strategy would require a quality policy development process to establish rigorous intervention logic, backed up by investment in an outcome measurement system.

New Zealand has led the world in this area before.[4] The strategic management system could be based on the government's strategic priorities,[5] akin to the system of strategic result areas and key result areas under the previous National administration (1990–99), or an enhanced version of the government's priorities under the 1999–2008 Labour-led administration. Other jurisdictions have been successful in implementing formal systems allocating accountabilities to ministers and chief executives and cascading planning, priority-setting and performance targets – in particular in the 'state-level planning' initiatives in sub-national government in Australia, Canada

Table 4: Strategy 4, legislating for outcomes at the centre

Dimensions		Elements	
Purpose	Ministerial accountability	*Objective setting* – how	Ministerial outcome responsibility statements
Locus	Ministerial portfolios, flowing into clusters of agencies	*Organisational performance information and development* – where the emphasis lies	Organisational outcomes hierarchies and measures in ministerial statements anchored
Focus	Ministers – sector outcomes Organisational – specific outcomes hierarchies	*Monitoring* – where and how performance information is monitored	Quality of outcomes-thinking used in chief executive performance reviews
Scope	Ministers – intervention choices (comprehensive) Organisational – outputs and capability (comprehensive)	*Performance information reporting* – where and how performance information is reported	Annual report by ministers against their outcome responsibility statements Annual report by organisations against organisational outcomes hierarchies and outputs (limited)
		Decision rights – where they are assigned	Steering role of and selection of interventions by ministers strengthened

and the United States. The principal learning from New Zealand's experience is that a strategic management system is particular to the government of the day, and previous systems have not withstood a change of prime ministers.

As with the previous strategies, this approach is based on the view that political restraint underpins the lack of sustained progress on responsibility for outcomes. This approach is, however, a strengths-based approach which builds on political leadership practice within the current legislative framework and authorising environment. Consideration could be given to simplifying reporting requirements, by removing service performance reports from the current attest audit approach[6] and removing financial reporting from annual departmental reports. Departmental financial statements could be made available on Treasury's website as part of the financial statements of the government, or on each department's website. The chief executive performance management process could be amended by explicitly including progress against the agency's main priorities in the review.

Strategy 4: legislating for outcomes at the centre

The fourth strategy involves legislating for outcomes at the centre, building on the foundations of the Public Finance Act 1989 relating to outcomes that have never been realised. The strategy would aim to achieve a subtle but important rebalancing of the formal system to include responsibility for outcomes as well as accountability of outputs.

This strategy aims to enhance the design of the formal performance management system by providing an explicit role for ministerial leadership of outcomes. This design would have as its centrepiece a statutory requirement for ministers to assume formal responsibility for the articulation of outcomes, including performance information (indicators and targets), and reporting results. This variant involves similar clarity in new areas as already exist for the government's fiscal strategy under the fiscal responsibility provisions in the Public Finance Act 1989.[7] The option is based on the view that underpinning the lack of sustained progress on outcome performance information is the incompleteness in the design of the system due to a political constraint. Nonetheless, this strategy works within the current authorising environment.

The potential for this strategy to drive change in practice will depend on the extent to which ministerial outcome responsibility statements (and the attendant changes) address the constraint imposed by an authorising environment dominated by the 'iron rule of political contest'.

The previous strategies all involve relatively modest change to the authorising environment, and risk making a limited contribution to achieving a step change in organisational performance management. It is to this constraint that discussion of strategy 5 turns, starting from the position that accountability for performance requires change in the 'two cultures' of the political world (ministers and Parliament) and the managerial world (public officials) (Prebble, 2010, page 50).

Strategy 5: reframing the political contest

Strategy 5 – reframing the political contest – is the sea-change option, which aims to achieve transformational change by altering the authorising environment. This strategy involves moving from oppositional politics to a more consensual multi-party and community-based approach to improving performance. The aim is to shift the political constraint that has limited sustained progress on outcome performance information by creating a political circuit-breaker that disrupts the iron rule of political contest.

The premise for Strategy 5, therefore, is that it is not possible to get traction with improving public management performance without changing the more important or dominant characteristics of the authorising environment, even if only by chipping away at them. In a nutshell, this strategy would involve broadening the focus of change to cover elements of the authorising environment and repositioning the nature of the relationships between the bureaucracy, ministers, the legislature and the wider public. Strategy 5 has the potential to achieve transformational change. This strategy is based on breaking the 'blame game' by moving to a more community-based and consensual multi-party approach to improving performance, and, as part of that, to more shared arrangements for policy making. To be effective, 'breaking the blame game' would require high-quality engagement and genuine buy-in, as well as the development of credible and accessible state reports against benchmarks. In the process, this strategy has the potential to shift political discourse into a more outcome- and evidence-informed space.

The strategy starts from the proposition that there is space for political convergence around big policy outcomes. Although the politics is intermittently drawn to the lightning rod of values trade-offs between societal outcomes, generally the substance of current policy debate is about the best means to achieve the outcomes. Importantly, this approach would build a platform for performance dialogue that emphasises improvement and rectification over fault-finding and retribution.

As with the previous strategies, this approach involves a change in leadership style by shifting the focus away from agency-level output management towards an explicit performance context of outcome 'goals' and benchmarks, within which organisations shaped their performance and could assess their contribution to improving societal outcomes. This environment would provide a powerful framework within which staff could be empowered to make a difference. If successful, the strategy would result in societal outcomes that stand as enduring features of the political landscape, not political slogans linked to one administration.

As with the previous strategies, the increased emphasis on selective reporting and the development of new outcome-related performance indicators could be accompanied by a move to more selective and variable reporting, based on size, customer and function. The chief executive performance management process would be amended by including in the review an examination of chief executives' understanding of progress against the outcome indicators, and their effectiveness in balancing political pressures with longer-term outcome achievement.

Table 5: Strategy 5, reframing the political contest

Dimensions		Elements	
Purpose	Public participation and dialogue, and organisational learning	Objective setting – how	Societal-level outcomes, benchmarks and measures set by Kiwis' Council (or equivalent)
Locus	Independent analysis of credible societal outcomes information	Organisational performance information and development – where the emphasis lies	Organisational outcomes hierarchies and measures anchored in societal outcomes
Focus	Independent – societal outcomes Organisational – specific hierarchies	Monitoring – where and how performance information is monitored	Quality of outcomes thinking used in chief executive performance reviews
Scope	Societal – comprehensive outcomes reporting Organisational – specific outcome reporting	Performance information reporting – where and how performance information is reported	Societal outcomes reported independently, and regularly (less frequently than annual and varying cycles) Annual reports against organisational outcomes hierarchies and outputs by organisations
		Decision rights – where they are assigned	Following community engagement, societal outcomes are determined

What is to be done?

When considering these strategies, it is important to distinguish between limitations or parameters that can be changed and constraints that cannot. In this context limitations are the design variables or parameters that were specific to the New Zealand public management model of organisational management. These limitations need to be clearly distinguished from the constraints that are inherent in politics, people and public services, and that are faced by any conceivable public management model. Limitations specific to the New Zealand public management model, which by their nature can be considered for change, include characteristics that:

- are inherent in the design of the formal system;
- reflect incompleteness in the design of the formal system;
- reflect poor implementation (inconsistent with the design and not design flaws).

Constraints faced by any conceivable public management system, are inherent in:

- politics, specifically in Westminster democracies;
- people – their limits and bounded rationality;
- public services, with several services provided by governments having limited comparability with services provided in the private sector (and so limited competition for supply) and limited (or difficult) measurability (or contractibility).

By contrast, the role played by the agencies at the centre of the state sector is a limitation that can be varied, rather than a constraint under which we are compelled to operate. It was expected at the time of the public sector changes that central agencies would use performance information to hold chief executives accountable for organisational performance. In reality, however, we found relatively little (and decreasing) use of performance information by the central agencies, other than as a measure of bottom-line performance when things go wrong. The strategies we have proposed in this article suggest a more active leadership role by the centre in developing organisational performance management systems, and more actively using the information that emerges.

What the best strategy is for improving organisational performance through achieving outcomes-focused management depends on the view of the fundamental constraints and limitations on improving organisational focus on outcomes within the overall system. If the dominant problem is one of poor implementation rather than design flaws or incompleteness, the most effective responses are most likely to be technical ones, such as a product re-launch and greater focus on the implementation approach. If the dominant problem is the iron rule of politics, a technical solution based on a product re-launch is unlikely to be effective in achieving a step change, and a change in the authorising environment may be required. No change to the legislation underpinning the public management system, for example, will fundamentally change Ladley's iron rule.

Next steps

This article has set out a range of possible strategies for developing the system of organisational performance management to focus on improving the overall effectiveness of the state sector in achieving outcomes. Regardless of the broad strategy, or mix of strategies, chosen, important implementation issues and challenges will need to be addressed, including leadership and capability-building, and realism needed about the resources and time required to move forward.

A seasoned Wellington commentator has classified the capabilities of New Zealand public agencies to manage for outcomes as follows: organisations 'either don't have the data; have the data and lack the ability to interpret it; or have the data and capability, and have never tried'. While this judgement may be harsh, the implication is correct. Using performance information to manage for outcomes may not be a holy grail, though it is certainly a long quest. The quest requires a sustained commitment of resources to build the capability dedicated to measuring outcomes and the effectiveness of interventions. Pursuit of the quest is analytically challenging and expensive, requiring time, sustained investment, commitment and leadership within public agencies.

The strategies proposed in this article have presented options for what could be removed from the performance management system, as well as what may need to be added. Half-hearted change, which adds new features to an already cluttered system without removing other components, is likely to make system performance worse. Addressing this problem will require proper system design that integrates new components into the formal system and reduces or removes others.

Making progress will also require effective concerted leadership from the agencies at the centre. That leadership will need to be based on an informed understanding of the positive role of performance measures, as well as of the inherent limits in terms of gaming, cheating, limited coverage (synecdoche) and complexity. The starting point is that those who act – and exercise accountability – must have a degree of self-awareness of the perspectives that they bring to bear to particular issues. The numbers never speak for themselves, and inevitably there is some subjectivity around their meaning. Bedding in this change will require greater sophistication from the agencies at the centre to manage the inherent tensions.

Leadership, capability-building and adequate resources are necessary, but they are insufficient on their own. Managerial solutions cannot, by themselves, address what are principally political problems – they will not take the politics out of politics. To be effective, the strategies will need to recognise the reality of the 'two cultures' of the political world. Anchoring the changes we have suggested for achieving a step change in public management in New Zealand will require building a shared and sustained understanding and commitment from all those involved – managers and staff in departments as well as ministers. Achieving the changes in practice will require sustained and astute leadership from the centre and concerted effort from line agencies. A system that is cluttered by the debris of previously failed changes is an entirely predictable outcome from a half-hearted approach to change. We owe it to New Zealanders to do better than that.

1 Outcomes-focused organisations are those whose resources, processes and outputs are shaped by the desire to achieve an explicit outcome or result: the Land Transport Safety network discussed in chapter 13 of Gill, 2008 provides a good New Zealand example of working in this way.
2 The land transport network case study is the exception to the rule: 'If you don't achieve them then it's a constant whipping that you get every year when … the target hasn't been met' (Gill, 2008, p.346).
3 'Interventions' is jargon for a variety of policy instruments, including outputs, specific taxes, transfers and regulation.
4 For a discussion of the requirements for an effective strategic management system, including political leadership, bureaucratic capability, the quality of outcomes information and clarity of analysis, see State Services Commission, 1998.
5 The government's strategic priorities are the priorities it wishes to pursue through a variety of policy interventions. There is an important distinction between 'outcomes' and 'government priorities', a phrase that has more general coverage. Government priorities may address interventions, capability-building and so on in addition to outcomes.
6 'Attest audits' involve the auditor providing a clear expression of opinion, based on their review and assessment of the conclusions drawn from evidence obtained in the course of the audit. Attest audits are intended to provide assurance about the written assertions made by the party that has been audited (NZICA, 2006, pp.317-18).
7 Section 26I of the Public Finance Act 1989 requires a fiscal strategy report each year with the Budget which includes explanations of variations and changes from the previous year's report; section 26N requires a statement on the long-term (40 years) fiscal position at least every four years.

References

Advisory Group on the Review of Australian Government Administration (2010) *Ahead of the Game: blueprint for the reform of Australian government administration*, Canberra: Commonwealth of Australia

Bourgon, J. (2008) 'The future of public service: a search for a new balance', *Australian Journal of Public Administration*, 67 (4), pp.390-404

Dunleavy, P, H. Margetts, S. Bastow and J. Tinkler (2006) 'New public management is dead: long live digital era governance', *Journal of Public Administration Research and Theory*, 16 (3), pp.467-94

Gill, D. (2008) 'Managing for performance in New Zealand: the search for the holy grail?', in KPMG International (ed.) *Holy Grail or Achievable Quest: international perspectives on public sector performance management*, KPMG International

Gill, D., S. Pride, H. Gilbert and R. Norman (2010) *The Future State*, working paper 10/08, Wellington: Institute of Policy Studies, http://ips.ac.nz/publications/files/3790f871257.pdf

Gill, D. (ed.) (2011) *The Iron Cage Recreated*, Wellington: Institute of Policy Studies

Lindquist, E. (2011) *No Reform Left Behind: integrating frameworks and implications for New Zealand's centre-of government and public sector improvement*, working paper 11/01, Wellington: Institute of Policy Studies

NZICA (2006) 'The audit report on an attest audit', Auditing Standard 702, issued by council of the New Zealand Institute of Chartered Accountants

Osborne, S. (2006) *The New Public Governance?: emerging perspectives on the theory and practice*, Taylor & Francis

Prebble, M. (2010) *With Respect: parliamentarians, officials, and judges too,* Wellington: Institute of Policy Studies

State Services Commission (1998) *A Better Focus on Outcomes through SRA Networks*, occasional paper 3, Wellington: State Services Commission

State Services Commission, Treasury and Department of the Prime Minister and Cabinet (2009) *Performance Improvement Framework Agency Formal Assessment: the performance improvement framework in detail,* Wellington: State Services Commission, Treasury and Department of the Prime Minister and Cabinet

Treasury (2009) 'Better Administrative and Support Services', http://www.treasury.govt.nz/statesector/performance/bass

Peter Mumford

Best Practice Regulation
Setting Targets and Detecting Vulnerabilities

How good is our regulation? Are there opportunities for improvement through either materially rethinking how we regulate or a process of continuous improvement? Are there latent weaknesses in our regimes which may result in, for example, another 'leaky building' situation?

One of the problems we have in answering these questions is the lack of a shared understanding of the attributes of good-quality regulation. Arguably, a shared understanding would help mobilise and co-ordinate dispersed knowledge of how the law is working in practice, and give us a better appreciation at any point in time of the health of our regulatory regimes. This article identifies a set of best practice regulatory principles and associated performance indicators and, while recognising the limitations of hindsight, explores the possibility that applying these principles would have given us early warning of the weaknesses in the 1991 building control regime.

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Regulatory regimes as experiments

We often have an idealised or optimistic view of regulation based on what we believe it will deliver by way of outcomes, be they economic, social or both. It is generally articulated, at least by the proponents of a particular regulatory approach, at the time that approach is being developed and implemented. However, the reality can fall short of the ideal, so much so on some occasions that the regulatory approach is considered to have failed and a new ideal is articulated. This pattern of optimism followed by disappointment followed by optimism can be observed over time and across different regulatory areas. It can also be observed in pendulum swings between different regulatory approaches, which often take the form of slogans – such as 'light-handed' versus 'heavy-handed', 'prescriptive' versus 'principles' or 'more' versus 'less' government.

But excessive optimism or pessimism, pendulum swings and slogans are not necessarily helpful to rational policy making. It would be better to reflect the reality that for the most part regulatory regimes are *experiments*: in other words, when a new regime is put in place we do not know in advance precisely how it will work in practice. It may well be that the assumptions and evidence on which the regime is based are robust, based on generally acceptable standards for the quality of policy advice. The regime might also work in the intended manner in most circumstance and most of the time. However, we must also acknowledge that the environment in which regulation operates, and that it is intended to influence, is highly complex and often unstable. For example, population groups are heterogeneous and what might work for one group may not for another. The performance of regulators themselves is influenced by a range of incentives and underlying capabilities (see Bardach and

Kagan, 1982 for an analysis of factors which affect regulator performance). Over time societal expectations, technologies and markets all change, which means that regimes which may have worked at one point in time might not at another.

Anticipating all the circumstances that a regulatory regime is likely to encounter at any point in time, and over time, and predicting how the regime will work in those circumstances is beyond human capability. If we do accept, nevertheless, the proposition that regulatory regimes are experiments, and novel regimes even more so, then constant monitoring and evaluation over time are critical. How should this be done? I would like to propose three elements of a strategy.

The first is that there is a shared agreement within the regulatory and policy communities and with key stakeholders on the generic attributes of good-quality regulation. This goes further than simply agreeing on regulatory objectives and the means of achieving them. Within an experimental frame our interest is in those attributes that contribute to the robustness of the regime and to its durability. Secondly, there is timely feedback on how regulatory regimes are performing in practice, relative to these attributes. Thirdly, there is the capacity to evaluate the feedback – to sort the wheat from the chaff – and a willingness to act when the situation requires it, based on empirical evidence and sound judgement.

Within an experimental frame one aim is to improve regulatory regimes through a process of continuous improvement. We have also learnt from experience that an equally important aim is to minimise the risk of regulatory failure, with its associated social and economic costs.

Table 1: Best practice regulation principles and indicators

The principles have been drawn from Treasury experience and cross-checked against OECD, APEC and World Bank principles, and principles that have been adopted in comparable jurisdictions such as the United Kingdom, Australia and the United States, and against earlier New Zealand principles, in particular the Code of Good Regulatory Practice.

Attribute	Principle	Indicators
Growth-supporting	Economic objectives are given an appropriate weighting relative to other specified objectives	1. Identifying and justifying trade-offs between economic and other objectives is an explicit part of decision making 2. The need for firms to take long-term investment decisions is taken into account in regulatory regimes where appropriate 3. Open and competitive domestic and international markets an explicit objective
Proportional	The burden of rules and their enforcement should be proportionate to the benefits that are expected to result	1. A risk-based, cost-benefit framework is in place for both rule-making and enforcement 2. There is an empirical foundation to regulatory judgements
Flexible and durable	Regulated entities should have scope to adopt least-cost and innovative approaches to meeting legal obligations The regulatory system has the capacity to evolve to respond to changing circumstances	1. The underlying regulatory approach is principles- or performance-based, and policies and procedures are in place to ensure that it is administered flexibly 2. Non-regulatory measures, including self-regulation, are used wherever possible 3. Feedback systems are in place to assess how the law is working in practice 4. Decisions are reassessed at regular intervals and when new information comes to hand 5. The regulatory regime is up to date with technological and market change, and evolving societal expectations
Certain and predictable	Regulated entities have certainty as to their legal obligations, and the regulatory regime provides predictability over time	1. Safe harbours are available and/or regulated entities have access to authoritative advice 2. Decision-making criteria are clear and provide certainty of process 3. The need for firms to take long-term investment decisions is taken into account in regulatory regimes where appropriate 4. There is consistency between multiple regulatory regimes that affect single-regulated entities where appropriate
Transparent and accountable	Rules-development, implementation and enforcement should be transparent	1. Regulators must be able to justify decisions and be subject to public scrutiny
Capable regulators	The regulator has the people and systems necessary to operate an efficient and effective regulatory regime	1. Capacity assessments are undertaken at regular intervals and subject to independent input and/or review

Attributes of best practice regulation

What are the attributes of good-quality regulation? Drawing on a range of sources, including OECD and APEC documents, and guidelines and directives produced by many governments around the world,[1] the Treasury has codified a set of attributes in the form of principles and performance indicators (as set out Table 1).

The second of these attributes is *proportionality*, which is expressed as the principle that the burden of rules and their enforcement should be proportionate to the benefits that are expected to result. Another way to describe this principle is that the emphasis is placed on a risk-based, cost-benefit regulatory framework and risk-based decision making by regulators.

Risk-based regulation requires consideration of the likelihood and consequences of an adverse event and the costs of mitigating the risk. It assumes that risk cannot be taken out of people's lives, and hence it sets a threshold for state intervention. Underpinning risk-based regulation is both evidence and judgement. In many situations the evidence we need is science-based, and this requires us to have particular regard to the linkages between the regulatory and science systems. But information is also required on the community's tolerance for risk, having regard to the cost of mitigating the risk (there is a rich risk literature (for example, see Bryner, 1994; Kraft and Vig, 1988; Vogel, 1986; Brown, 1987; Breyer and Heyvaert, 2000; Slovic, 1987; Sapolsky, 1986; HM Treasury, 1996)).

Judgement is necessary because evidence is often incomplete. The exercise of judgement is a cognitive process and in designing regimes that rely on judgement we must have regard to the characteristics of those who are to exercise it. The literature on expertise and wisdom provides signposts to what those characteristics are. For example, it makes a clear distinction between those who are competent and those who are expert, the latter being able to make accurate intuitive judgements in complex decision-making contexts where there is a high level of uncertainty (useful sources on expertise are Ross, 2006 and Ericsson et al., 2006). Experts are likely to have a minimum of ten years' experience, leading to the 'ten-year rule', but experience is only one of the conditions. K. Anders Ericsson of Florida State University has concluded that 'what matters is not experience per se, but "effortful study", which entails continually taking challenges that lie just beyond one's competence' (Ross, 2006). It is highly risky to implement a regime which requires expertise without an assurance that the right sort of experts are involved in decision making.

Best practice regulatory principles have value within an overall regulatory quality management system which treats regulatory regimes as experiments that require both ongoing monitoring and evaluation and consequential adjustments to ensure that the regimes continue to be effective and efficient.

The fourth of the attributes is *certainty*. This is the principle that the regulatory system should be predictable so as to provide certainty to regulated entities, and be consistent with other policies. Regulated entities require certainty because this reduces the costs and risks associated with compliance, not just now but into the future. Small and medium-sized enterprises are often singled out as those which particularly value certainty 'here and now'. The idea that regulatory regimes should provide certainty over time is also of particular importance to some regulated entities: for example, firms which have to make long-term investment decisions, either in innovation, markets or infrastructure, where the cost is upfront but the pay-off will be influenced by regulatory settings or decision making at a future time. Regulators also value certainty as it makes clear what they have to enforce, and so the job of enforcement easier.

Indicators of a regulatory system which provides certainty are the availability of safe harbours and access to authoritative advice; decision-making criteria that is clear and provides certainty of process; and evidence that the need for firms to take long-term investment decisions is taken into account in the design of regulatory regimes.

The third attribute is *flexibility*. This is reflected in the principle that regulated entities should have scope to adopt least-cost and innovative approaches to meeting legal obligations. Indicators of a regulatory regime that is flexible are that the underlying regulatory approach is principles- or performance-based and policies and procedures are in place to ensure that it is administered flexibly, and that non-regulatory measures, including self-regulation, are used wherever possible.

There can be tension between the attributes of certainty and flexibility. Providing for safe harbours such as deemed-to-comply standards within a principles- or performance-based regime is intended to resolve this tension, but many would acknowledge that configuring a regulatory regime such that both attributes are optimally reflected is a challenge.

Closely associated with flexibility is *durability*: the principle that the regulatory system has the capacity to evolve to respond to new information and changing circumstances. Flexibility and durability can be two sides of the same coin. That is, a regime that is flexible is more likely to be durable, so long as the conditions are in place for the regime to 'learn'. Indicators of durability are that there are feedback systems in place to assess how the law is working in practice; decisions are reassessed at regular intervals and when new information comes to hand; and the regulatory regime is up to date with technological change. Adaptive efficiency and double-loop learning are amongst the techniques or systems that facilitate such learning (see

Driesen, 2004; Oregon State University, 2002; Smith, 2001).

The fifth of the attributes is jointly *transparency* and *accountability*. These are reflected in the principle that rules-development and enforcement should be transparent. In essence, regulators must be able to justify decisions and be subject to public scrutiny. The transparency and accountability principle includes non-discrimination, provision for appeals and sound legal basis for decisions.

The sixth attribute is capable regulators: specifically, that the regulator has the people and systems necessary to operate an efficient and effective regulatory regime. A key indicator of a regime that provides an assurance of capability is that capability assessments are undertaken at regular intervals and subject to independent input and/or review.

There is a seventh attribute which is associated with a particular outcome, and hence to some extent differs from the previous six in so far as they could be seen as intermediate objectives. This is growth-supporting, the principle being that economic objectives are given an appropriate weighting relative to other specified objectives. These other objectives could be related to health, safety or environmental protection or consumer and investor protection. Economic objectives include impacts on competition, innovation, exports and compliance costs, and trade and investment openness. An indicator of a regulatory regime that embodies this attribute is that the identification and justification of trade-offs between economic and other objectives are an explicit part of decision making. It does not assume that growth should be given prominence over other important outcomes; rather it responds to a belief that growth as an objective is not always given due weight.

Best practice regulatory principles have value within an overall regulatory quality management system which treats regulatory regimes as experiments that require both ongoing monitoring and evaluation and consequential adjustments to ensure that the regimes continue to be effective and efficient. Such principles are a codification of knowledge that exists, but is not necessarily shared by those who have responsibility for monitoring and evaluating regimes and those who have responsibility for the delivery of regulatory outcomes. They are also not necessarily shared by those who may have knowledge of how regulatory regimes are working on the ground. Shared principles can have a normative and persuasive effect, but also act as benchmarks against which the many actors in the system – those who monitor and evaluate, regulatory policy agencies and regulators, and stakeholders – hold each other to account.

Can monitoring against best practice principles help reveal latent weaknesses in regulatory regimes?

Within an experimental frame, continuous improvement, or a drive to reach the regulatory best practice frontier, is an important objective. Equally important is the early detection of the potential for regulatory failure. Through a retrospective application of the best practice regulatory principles to the 1991 building control regime, this section explores the possibility that proactive monitoring against them would have revealed latent weaknesses in the regime.

Regulatory failure results when a regulatory regime does not deliver what society reasonably expects it to deliver. The costs can be very significant. The failure of the building control regime which was introduced by the Building Act, 1991 affects at least 42,000 homes at a cost of at least $11.3 billion (PricewaterhouseCoopers, 2009). Could latent weaknesses in the 1991 building control regime have been identified beforehand, and the likelihood of ultimate failure lessened?

Novel regulatory regimes are inherently more experimental than established regimes, and the 1991 building control regime was particularly novel. Not only did it embody a novel regulatory approach – specifically, performance-based regulation – but it was also a uniquely pure application of a performance-based philosophy (May, 2003), compared with building control regimes in other countries which have retained quite a prescriptive character.

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What makes performance-based regulation novel? I will highlight three features. The first is associated with its underlying regulatory philosophy. Performance-based regulation sets goals and is deliberately not overly prescriptive about how to achieve them. These goals can have varying degrees of specificity: in some cases they can be quite general, such as the need to achieve adequate levels of safety, but with no definition of what 'adequate' means. Therefore, a defining feature of performance-based regulation is that it is more reliant on expert judgment, at least relative to a prescriptive regime based on standards refined over time through a process of trial and error (Mumford, 2011, p.111).

Secondly, the case for performance-based regulation is often made on the basis that it will facilitate innovation, often technological innovation: for example, a new building technology. Innovation typically involves some degree of risk-taking, and it is a reasonable conclusion that performance-based regulation is in many cases a policy experiment to facilitate technological experimentation. This was evident in the leaky-building example. The combination of monolithic cladding, untreated timber, complex building designs, adverse weather conditions, and a lack of sensitivity by building practitioners to the vulnerabilities of this combination resulted in a failed technological innovation, to such an extent that it resulted in the failure of the innovative regulatory regime.

The third feature is that performance-based regulation is often adopted as a reaction to prescriptive regulation (Mumford, 2011, pp.8-9). Prescriptive regulatory regimes are often highly path-dependent and deeply embedded. Such regimes are therefore familiar to those who administer them, and to those who are required to comply. They may not like the regime; they may find it heavy handed, costly and inflexible. But they are conditioned through experience to working with it and have developed relevant behaviours and capabilities.

The shift from prescriptive to performance-based regulation therefore is a material shift as it inevitably requires new capabilities and behaviours. These are required across the spectrum, from regulators to regulated entities, expert bodies, and consumers or investors. New institutions may also be required, to collect, assess and diffuse information and identify and reinforce appropriate behaviours. It should be noted that the challenges of regime change are not unique to performance-based regulation; but they are likely to arise in most if not all regime-change contexts.

It is argued here that monitoring of the 1991 building control regime against the best practice principles may have revealed a regime that was vulnerable to failure.

By way of background, the 1991 Building Act put in place a performance-based building framework. The purpose of the act was to ensure that buildings were safe and healthy for those who used them, but an important objective of the new regime was to encourage innovation in the building and construction industry (Mumford, 2011, p.11). The way the regime reflected this objective was through the performance-based building code and provision for both alternative and acceptable solutions. Acceptable solutions were the old prescriptive standards, and compliance with an acceptable solution was deemed compliance with the performance requirements in the building code. Alternative solutions were one-off designs, and territorial authorities were required to determine whether, on reasonable grounds, the designs met the sometimes quite general code requirements. In making their decisions, the territorial authorities could and often did draw on expert advice, and in situations of doubt or dispute they could seek a determination from the Building Industry Authority.

The passage of the 1991 Building Act presaged a new regulatory environment which shifted the responsibility for decision making from standards committees .... to territorial authorities, building certifiers, designers and builders and their advisrers.

Buildings that leaked resulting in damage were not compliant with the performance requirements of the building code. In effect, the judgement exercised by territorial authorities when giving consent to monolithic-clad building designs, and inspecting such buildings in the course of construction, was wrong. However, the 1991 regime did not fail because some buildings leaked. The regime failed because a very large number of buildings leaked causing significant damage, economic cost and social hardship over an extended period of time.

Had we assessed the building control regime against the best regulatory practice principles in, say, the mid-1990s, we probably would have said that the growth-supporting objective was reflected in the regime. Innovation, and for that matter compliance-cost reduction, were important considerations in the administration of the regime. We would similarly have been comfortable, I expect, with the flexibility the regime provided through the alternative solutions route. We may have been comfortable with the certainty that was provided by deemed-to-comply acceptable solutions, but could have picked up a concern that the lack of detail in consent applications led to uncertainty about whether plans and specifications did in fact meet the performance requirements in the Building Code (Government Administration Committee, 2003, p.31). It is doubtful that we would have identified significant issues in relation to transparency and accountability in the mid-1990s, although accountability issues were highlighted in the various analyses of the leaky building crisis (May, 2003, p.397).

We may have been less sanguine about proportionality. There was apparently no formal risk assessment of new building technologies, such as monolithic cladding, having regard to the state of the building sciences, information being volunteered by industry participants and drawn from overseas experience, the objectives of the Building Act and the performance requirements of the Building Code. To the extent that risk-based judgements were made, they were permissive rather than precautionary (Mumford, 2011, p.83). Another way of saying this is that the regulators put a lot of weight on the innovation objective and less weight on acquiring and weighing evidence on the efficacy of innovative building technologies.

We would also most likely have been concerned about durability, as it has been couched in the Treasury principles and performance indicators with their emphasis on the need for robust feedback

Table 2: Retrospective assessment of 1991 building control regime against best practice principles

Growth-supporting	Proportional	Flexible	Durable	Certain and predictable	Transparent and accountable	Capable regulators

Grey = strong indication of concern; dark blue = possible area of concern; Light blue = no significant concerns

systems to monitor and evaluate how the law is working in practice. In the context of the building control regime, the assessment and associated feedback loops would have been against the primary purpose of the act, which was health and safety, and against the key objective of innovation in the building and construction industry. It should have taken into account how novel building technologies were performing in the field given uncertainties about how they would perform in all the circumstances of their use. It is clear in the building code case that there was not a robust monitoring and evaluation framework. As a consequence, important knowledge about the performance of new building technologies, and the implications of this for the consenting and inspection process, were not revealed and assimilated into the building control system in a timely manner (Mumford, 2011, p.83).

Another of the principles we would have been concerned about is capability. The passage of the 1991 Building Act presaged a new regulatory environment which shifted the responsibility for decision making from standards committees, who, for the most part, make changes at the margin to existing building standards on the basis of a consensus of technical experts and community representatives, to territorial authorities, building certifiers, designers and builders and their advisers. This was a material shift, given that the decisions that needed to be made required significant judgement, not just in relation to technical matters but also on the community's risk preferences. It demanded a higher level of technical expertise, as well as input from those in the community who were able to contribute to the judgements on what is an acceptable risk.

In the final analysis, it is clear that those who were required to make such judgements lacked the expertise to do so. This did not appear to have been recognised as an implementation issue for the regime, or, if it was recognised, not acted upon (Mumford, 2011, p.83).

Conclusion

I have briefly outlined two propositions. The first is that regulatory regimes are experiments, and novel regulatory regimes are particularly experimental. The second is that it is possible to codify a generic set of best practice principles and performance indicators that can be applied at the regime level as benchmarks for design and administration, and at the systems level to gauge how well policy experiments are working.

I have attempted to demonstrate, by reference to the failure of the 1991 building control regime, how treating the regime as an experiment and assessing it against the principles, having regard to the particular vulnerabilities of performance-based regulation as a class of regulation and the challenges of regime change, may have revealed weaknesses within the regime which increased the risk of failure.

Performance-based regulation is a particular class of regulation that reflects certain objectives and similar design features, and has certain vulnerabilities associated with these. A shared objective is a regulatory regime which facilitates innovation, and this is done through a regulatory design which values flexibility. A key vulnerability arises when innovation involves risk-taking; flexibility requires expert judgement, as the efficacy of such a regime depends on having the right people making the decisions, and robust feedback loops and a capacity to respond appropriately to that feedback. It is an increasingly popular class of regulation (OECD, 2002; External Advisory Committee on Smart Regulation, 2004).

So the 1991 building control regime was not unique, at least in relation to certain key attributes. It was unique in so far as it failed. Does this reduce its value as an analogy for other performance-based regulatory regimes? In other words, was the combination of factors that led to the failure specific to the built environment? The answer must be that while performance-based regulatory regimes may not necessarily fail, the building case demonstrates that they can fail, and as public policy advisers it is incumbent on us to minimise the risk of failure.

In complex decision-making contexts we often revert to heuristics, or 'rules of thumb'. In an experimental frame the two that we might emphasise are 'thinking ahead' and 'thinking along the way' (Amanda Wolf, personal communication). Thinking ahead in the regulation context means being aware of the many things that could go wrong, based on a good historical understanding of the strengths and weaknesses of different classes of regulation. Thinking along the way means taking a real-world approach by asking what is happening in practice and whether this is consistent with the objectives, and being prepared to adjust the regime as you go.

I will conclude with two questions. The Treasury initiative to describe a set of best regulatory practice principles and performance indicators assumes that we are able to apply these across the broad range of regulation as an initial diagnosis of whether there is potential for improvement within regimes – to shift closer to the best practice frontier – and to detect latent weaknesses which may result in regulatory failure. However, at one level regulatory regimes are not the same. While they may have a similar underlying philosophy, and performance-based regulation is an example of this, they have different design features and the context in which they apply is different. Is it possible that in applying a generic set of principles and indicators we miss something fundamental to the efficacy of a regime?

My second question reflects an alternative view. In this highly complex world in which we live, will a set of partial indicators, which the best practice principles inevitably are, applied widely as benchmarks and an initial diagnostic and early warning device, cast more daylight on the performance of our regulatory regimes than would otherwise be the case?

1 For example, see OECD, 1995, 1997; President of the United States, 1993, 2011; Coalition of Australian Governments, 2007; APEC and OECD, 2005.

Acknowledgements

I thank Dr Amanda Wolf, Senior Lecturer in the School of Government, and the Regulatory Quality Team, Treasury, for their comments on this article. The views, opinions, findings, and conclusions or recommendations expressed in this article are those of the author. They do not necessarily reflect the views of the New Zealand Treasury or the Ministry of Economic Development.

References

APEC and OECD (2005), *APEC–OECD Integrated Checklist for Regulatory Reform*

Bardach, E. and R.A. Kagan (1982) *Going by the Book: the problem of regulatory unreasonableness*, Philadelphia: Temple University Press

Breyer, S.G. and V. Heyvaert (2000) 'Institutions for regulating risk', in R. Revesz, P. Sands and R.B. Stewart (eds), *Environmental Law, the Economy, and Sustainable Development*, Cambridge: Cambridge University Press

Brown, P. (1987) 'Popular epidemiology: community response to toxic waste-induced disease in Woburn, Massachusetts', *Science, Technology and Human Values*, 12 (3–4), pp.78-85

Bryner, G.C. (1994) 'Trends in social regulation', in D.H. Rosenbloom and R.D. Schwartz (eds), *Handbook of Regulation and Administrative Law*, New York: M Decker

Council of Australian Governments (October 2007) *Best Practice Regulation: a guide for ministerial councils and standard setting bodies*, Canberra

Driesen, D.M. (2004) 'The economic dynamics of environmental law: cost-benefit analysis, emissions trading, and priority-setting', *Boston College Environmental Affairs Law Review*, 31 (3), pp.501-28

Ericsson, K.A., N. Charness, P.J. Feltovich and R.R. Hoffman (eds) (2006) *The Cambridge Handbook of Expertise and Expert Performance*, Cambridge University Press

External Advisory Committee on Smart Regulation (2004) *Smart Regulation: a regulatory strategy for Canada. Report to the Government of Canada*, http://dsp-psd.pwgsc.gc.ca/Collection/CP22-78-2004E.pdf

Government Administration Committee (2003) *Weathertightness of Buildings in New Zealand*, Wellington: New Zealand Government

HM Treasury (1996) *The Setting of Safety Standards*, London: HM Treasury

Kraft, M.E. and N.J. Vig (1988) 'Evaluating technology through public participation: the nuclear waste disposal controversy', in M.E. Kraft and N.J. Vig (eds) *Technology and Politics*, Durham: Duke University Press

May, PeJ. (2003) 'Performance-based regulation and regulatory regimes: the saga of leaky buildings', *Law and Policy*, 25 (4), pp.381-401

Mumford, P. (2011) *Enhancing Performance-based regulation: lessons from New Zealand's building control system*, Wellington: Institute of Policy Studies

OECD (1995), *Recommendation on Improving the Quality of Government Regulation*, Paris: OECD

OECD (1997), *Policy Recommendations for Regulatory Reform*, Paris: OECD

OECD (2002) OECD R*eview of Regulatory Reform: regulatory policies in OECD countries*, Paris

Oregon State University (2002) *Adaptive Management*, http://oregonstate.edu/instruction/anth481/ectop/ecadm.html, accessed 10 April 2008

President of the United States (1993) 'Regulatory planning and review', executive order 12866, 30 September, *Federal Register*, 58 (190), 4 October

President of the United States (2011) 'Improving regulation and regulatory review', executive order 13563, 18 January, *Federal Register*, 76 (14), 21 January

PricewaterhouseCoopers (2009) *Weathertightness: estimating the cost*, Wellington: Department of Building and Housing

Ross, P.E. (2006) 'The expert mind', *Scientific American*, 24 July, www.scientificamerican.com/article.cfm?id=the-expert-mind

Sapolsky, H.M. (ed.) (1986) *Consuming Fears: the politics of product risks*, New York: Basic Books

Slovic, P. (1987) 'Perception of risk', *Science*, 236 (4799), pp.280-5

Smith, M.K. (2001) 'Chris Argyris: theories of action, double-loop learning and organizational learning', *Encyclopedia of Informal Education*, www.infed.org/thinkers/argyris.htm, updated 7 September 2009; accessed 11 April 2008

Vogel, D. (1986) *National Styles of Regulation: environmental policy in Great Britain and the United States*, Ithaca, NY: Cornell University Press