Wicked Problems: The Implications for Public Management

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Draft for further development; comments welcome.

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Abstract

This paper has three sections. In the first section we examine the conceptual literature on 'wicked problems', noting the main dimensions of such problems, and indicating why these issues have been attracting more attention in recent times.

In the second section, we note that there has been very little attention to the *implications for public management* of how 'wicked problems' are identified, understood and managed. We therefore elucidate some of the *challenges* for traditional approaches in some of the key functional areas of public management, including strategy-making, organisational design, people management, and performance measurement.

In the third section, we draw on public management theory and practice to examine some possible *approaches* to building a capacity to address complexity and to increase effectiveness in dealing with 'wicked problems'. We group these approaches under three broad directions: systems thinking; collaboration, including joined-up government; and mobilising adaptive work. We also consider their implications for management structures and systems.

1. What are 'wicked problems' and why pay attention?

Background: technical vs social problem-solving

Rational-technical approaches to decision-making and implementation assume that clarity of goals, adequacy of information, and choice of appropriate methods can lead to efficient and effective action to achieve these goals. However, policy and planning frameworks based on rational-technical decision-making came under increasing fire from several quarters in the 1970s and 1980s. In one notable example, researchers analysing an ambitious US federal program for social and economic improvement in disadvantaged suburbs, demonstrated the massive practical obstacles to effective implementation of grand schemes with multiple goals, multiple agents, and multiple stakeholders (Pressman & Wildavsky 1973). They pointed out that the complexity of the coordination requirements, and confusion arising from divergent understanding of aims and means among many decision-makers, contributed to the huge gaps typically arising between ambitious promises and actual performance in broad multi-level programs.

From another perspective, scholars concerned with the quality of professional knowledge and practice in human services (e.g. Schon 1983) argued that technical rationality could not come to grips with the complex frames of reference of the professionals who provide valued services and tackle real problems. Nor could technical rationality comprehend the experiences of the citizens and clients who are supposed to be helped by these interventions. According to this critical viewpoint, the development of ever more comprehensive scientific expertise could not resolve the many difficult policy problems of the modern era – these should be understood in terms of competing value frameworks rather than gaps in knowledge (Schon & Rein 1994).

Within the planning, design and communications disciplines, a radical critique of expert-driven rational comprehensive planning became widespread (Churchman 1967, Rittel & Webber 1973), generally complemented by recommendations in favour of more participatory and dialogue-based approaches (Healey 1997, Innes &

Booher 1999). The most challenging critique had emerged in Rittel and Webber's now-famous paper, 'Dilemmas in a General Theory of Planning' (1973). They declared that the days of solving major problems through an 'engineering' approach have ended. Modern society is now seen as pluralistic rather than homogenous, and not amenable to top-down general solutions. Social groups increasingly exhibit important differences in aspirations, values and perspectives that confound the possibility of clear and agreed solutions. Modern problems of 'social or policy planning', they claimed, are different from those tackled by science and engineering – the latter problems are typically 'tame' or 'benign' in the sense that the elements of a mathematics or engineering problem are definable and solutions are verifiable. By contrast, modern social problems are generally 'ill-defined', and rely on political judgements rather than scientific certitudes. In this sense, most major public policy problems are 'wicked' (Rittel & Webber 1973: 160), i.e. they are inherently resistant to a clear and agreed solution.

Features of 'wicked problems'

Rittel and Weber identified ten primary characteristics of wicked problems:

1. There is no definitive formulation of a wicked problem.
2. Wicked problems have no 'stopping rule', i.e. no definitive solution.
3. Solutions to wicked problems are not true-or-false, but good-or-bad.
4. There is no immediate and no ultimate test of a solution to a wicked problem.
5. Every (attempted) solution to a wicked problem is a 'one-shot operation'; the results cannot be readily undone, and there is no opportunity to learn by trial-and-error.
6. Wicked problems do not have an enumerable (or an exhaustively describable) set of potential solutions, nor is there a well-described set of permissible operations that may be incorporated into the plan.
7. Every wicked problem is essentially unique.
8. Every wicked problem can be considered to be a symptom of another problem.
9. The existence of a discrepancy representing a wicked problem can be explained in numerous ways.

10. The planner has no 'right to be wrong', i.e. there is no public tolerance of experiments that fail.

Since the 1970s these characteristics of 'wicked problems' have been recognised and applied in a variety of scholarly disciplines ranging across political science (Harmon & Mayer 1986, Fischer 1993, Roberts 2000), natural resource management (Allen & Gould 1986, Freeman 2000, Salwasser 2004), urban and regional planning (Innes & Booher 1999), and cybernetics research (Conklin 2006). Recent writers have emphasized that attempts to address wicked problems often lead to unforeseen consequences, owing either to the instability of the problems or to the inappropriate selection of methods to tackle them (e.g. top-down authority may impose a formal solution without addressing the underlying causes). Wicked problems are seen as linked to social pluralism (multiple stakeholder interests and values), institutional complexity, and scientific uncertainty (fragmentation and gaps in knowledge).

According to one school of public management research, the *uncertainty* generated by wicked problems is what makes them so apparently intractable (Van Bueren, Klijn & Koppenjan 2003; Koppenjan & Klijn 2004: 6-7). Three different types of uncertainty are identified: substantive, strategic and institutional. 'Substantive' uncertainty refers to gaps and conflicting understandings in the knowledge base, with the consequence that there is no agreed or clear understanding of the nature of wicked problems. 'Strategic' uncertainty refers to the fact that many actors are involved, with different preferences, and the interaction between their perspectives is unpredictable. Thirdly, 'institutional' uncertainty refers to the fact that relevant actors are attached to a variety of organisational locations, networks and regulatory regimes, so that processes for reaching decisions concerning wicked problems are likely to be messy and uncoordinated. Thus, in this view, three types of uncertainty significantly complicate any efforts to address wicked problems.

The Australian Public Service Commission (APSC 2007) recently released a discussion paper on 'Tackling Wicked Problems'. Eight key features of wicked problems are outlined:

1. Difficult to clearly define
2. Many interdependencies and multi-causal aspects
3. Proposed measures may have unforeseen effects
4. Problems may be unstable and continue evolving
5. No clear and correct solution
6. Problems are socially complex with many stakeholders
7. Responsibility stretches across many organisations
8. Solutions may require behavioural changes by citizens and stakeholder groups.

The background conditions of modern life that promote complexity, inter-connectedness, pluralism and uncertainty are many and varied. For example, Roberts alludes broadly to the expansion of democracy, market economies, privatization, international travel and social exchanges highlighting value differences (Roberts 2000: 2). These and other diverse sources of complexity serve to underline the point that there is no 'root cause' of complexity, no root cause of 'wickedness', and therefore no single best approach to tackling such problems. If, for example, it is claimed that the fundamental cause of wicked problems is disagreement or divergence of perceptions, this claim already implies a preferred 'solution' pathway of *minimising complexity through agreement*. If, on the other hand, it is claimed that the fundamental problem is insufficient knowledge, the implied pathway is that of *further research* to address knowledge gaps and enhance consensus. These two examples nicely illustrate the original point, made by Rittel and many others, that problem-definition tends to imply a preferred solution. Hence, some caution is required with all proposed methods or approaches for addressing wicked problems, as they are all likely to be inadequate in various degrees.

However, even if specific approaches to wicked problems will necessarily be imperfect, political necessity requires that attempts must and will be made to address them. Politicians generally like to be seen as 'decisive', by taking action to address issues. This means that they may focus on tangible pieces of the puzzle rather than the holistic patterns of causality and inter-dependence of issues. Researchers do not agree on whether evaluation and learning frameworks are likely to be helpful. Rittel

and Webber (1973) made the radical assertion that there are no reliable criteria by which to assess the success of different approaches, and that learning by experience is not readily available in these matters. Along with more recent writers, we take a more pragmatic and cautiously optimistic view. We argue that although every 'solution' for dealing with wicked problems will necessarily be open to further interrogation and adaptation, this is no bad thing. Furthermore, we argue that some important learning processes are able to be mobilised, and some strategy choices are likely to be shown to be more viable in specific contexts than others.

We propose that the key features or parameters of 'wickedness' emerging from the literature can be distilled and grouped into two key dimensions. We refer to these as the complexity dimension and the diversity dimension. The first dimension, *complexity*, refers to the difficulties in acquiring knowledge of the wicked problem and of potential solutions. These difficulties arise from a patchy knowledge base; complex inter-dependencies of processes and structures; uncertainties arising from the contingent and dynamic nature of social issues and processes; and the incommensurability of many of the risks and potential trade-offs.

In his work on leadership, Heifetz has proposed a typology of different problem-situations confronting managers, in ascending order of difficulty (see **Table 1**). Type 1 situations are those where both the definition of the problem and the likely solution are clear to the decision-maker (e.g. the manager or policy expert). These situations require technical work on the part of decision-makers and those subject to their decisions. Type 2 situations are those where the definition of the problem is clear, but the solution is not – typically because the relevant cause-and-effect relationships are hard to discern – and therefore learning is required by both the public sector managers and the stakeholders they lead. In Type 3 situations, both the problem-definition and the solution are unclear, and more extensive learning is required by all concerned. Type 1 situations constitute 'tame' problems, whereas Type 3 situations, and many Type 2 ones, are 'wicked' problems.

Table 1: Situational types

Situation	Problem definition	Solution	Locus of responsibility	Kind of work
Type 1	Clear	Clear	Manager/ expert	Technical
Type 2	Clear	Requires learning	Manager/ expert and stakeholders	Technical and adaptive
Type 3	Requires learning	Requires learning	Stakeholders > expert	Adaptive

Source: adapted from Heifetz 1994: 76.

The second dimension is *diversity*, which refers to the number and variety of actors involved. This dimension is raised explicitly or implicitly by a number of the writers discussed above (e.g. the bases of uncertainty noted by Koppenjan and Klijn 2004), embracing both actors and their institutional locations and contexts. From the point of view of the decision-maker, diversity of either actors or institutional locations poses broadly similar kinds of difficulties. Both entail diverse sets of knowledge relevant to the issue which need to be shared in order to identify/define problems and consider appropriate responses to them. Similarly, they may have divergent interests or values which prompt them to be in conflict about the nature of the problem and how to deal with it. They all have expectations of the manager/decision-maker, and they all constitute or mobilise potential sources of information, permission or resources.

These two dimensions can be combined (see **Table 2**) to form a typology of problem types. Tame problems are those which have low levels of complexity and diversity. The more complex and diverse the situation, the more wicked the problem. This typology suggests that there are different kinds of wicked problems, and by implication that there are different types of responses to them. In particular, it suggests that there is more to tackling wicked problems than engaging in some form

of collaboration, which has tended to be the characteristic response of governments and policy-makers. We argue below for a more contingent approach, in which the type of response is tailored to the type of wickedness the problem seems to exhibit. Moreover, in the absence of clear and definitive solutions, according to Conklin:

> You don't so much "solve" a wicked problem as you help stakeholders negotiate shared understanding and shared meaning about the problem and its possible solutions. The objective of the work is coherent action, not final solution. (Conklin 2007: 5)

2. Challenges and implications for traditional public management

Traditional public administration, even without the sometimes unfair stereotypes which are occasionally applied to it, was not conducive to grappling productively with wicked problems. Its typically hierarchical form of organisation and system of control, though input monitoring and process compliance, substantially circumscribed the opportunities to think expansively about policy issues of the type that might be thrown up by wicked problems. Its tendency to recruit administrative employees at entry level and retain them in the same organisation, and to foster specialisation in areas of professional expertise, made each department a cultural fortress, and also tended to create what are sometimes termed 'silos' or 'stovepipes' within them, that is, an organisational fragmentation between functions. The combination of traditional bureaucracy and interest-group politics led to a 'muddling through' approach (Lindblom 1979) that could not address the big issues.

The sets of practices introduced from the 1980s under the broad heading of New Public Management were designed in part to address some of these shortcomings of traditional public administration (Pollitt 1990; Hood 1991). However, we argue that NPM practices have generally been ill-suited to dealing with wicked problems. This is so whether we are referring to its first-wave intra-organisational focus – sometimes labelled 'managerialism' or 'corporate management' – exemplified by the FMIP in Australia or the FMI in the UK – or its later more contractualist focus entailing purchaser-provider splits, outsourcing and privatisation.

Table 2: Typology of problems

Diversity → Complexity ↓	Single party	Multiple parties, each having only some of the relevant knowledge	Multiple parties, conflicting in values/interests
Both problem and solutions known (Heifetz Type 1)	Tame problem 1	2	3
Problem known, solution not known (relationship between cause and effect unclear) (Heifetz Type 2)	4	5	Wicked problem 6
Neither problem nor solution known (Heifetz Type 3)	7	Wicked problem 8	Very wicked problem 9
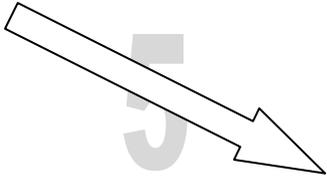
Managerialism – best characterised as 'managing for results' – entails orienting the public sector organisation's structure, co-ordination mechanisms, financial management, staffing and rewards around outcomes, broadly conceived as either sets of program purposes or groups of people served. It was modelled on the multi-divisional form of leading private sector corporations, each with its corporate headquarters overseeing semi-autonomous strategic business units, which it controlled through setting and monitoring performance outcomes (Alford 1998; Boston et al 1996).

To the extent that it moves away from a focus on inputs and processes, managerialism is likely to be more amenable to dealing with wicked problems than traditional public administration with its functional structures. By focusing further down the chain of 'program logic' towards outcomes, managerialism allows for the possibility of finding alternative means of achieving the desired results, rather than being confined to the established inputs and processes. But to the extent that it holds managers responsible for a particular set of program offerings or for serving a particular set of clients, the corporate management framework tends to reinforce a different form of silos, isolating from each other programs that may actually have subterranean connections in respect of certain wicked problems. This fragmentation manifests itself in tension between program-based sub-cultures, competing policy priorities and, at worst, turf wars within and between agencies.

This fragmentation between programs was intensified under contractualism, in several ways. Firstly, contractualism shifted the focus back along the program logic chain from outcomes to outputs. This stemmed from the necessity to clearly delineate what was required of producers in contracts; it is usually easier to specify outputs than outcomes (Carter et al 1992; Wilson 1989). But prescribing a particular output, as the means for achieving an outcome, tends to circumscribe the scope for imagining other means for doing so.

Secondly, contractualism entailed the separation of service-delivery functions from those devoted to formulating policy, deciding what services were needed, and arranging with providers to deliver them. These 'policy/delivery' or 'purchaser/provider' splits have also had the effect of fragmenting knowledge and

understanding about factors that might cause or at least affect wicked problems. In particular, they tended to block opportunities for providers, who were closer to the 'coal-face', to provide feedback to purchasers about operational problems and service-users' concerns (Stewart 1996). To the extent that the providers are private sector firms or voluntary/community organisations, the separation is all the greater, because of the different incentives and cultural norms they exhibit. The most extreme form of contractualism, namely the privatisation of government functions, further aggravates the separation between different parties relevant to addressing a given wicked problem.

Thirdly, contractualism entailed the establishment of competition between service-providers, typically in competitive tendering processes (O'Flynn and Alford 2008). Designed to drive efficiency and effectiveness, this also had the effect of undermining co-operation among those who might collectively have significant information or insights relating to wicked problems. Competition gave them an incentive to withhold rather than share knowledge.

These impediments to addressing wicked problems, within both managerialism and contractualism, are reinforced by some of the systems and controls which have also accompanied New Public Management. Financial management processes have been recast in the form of output budgeting and accrual accounting, which demand in an unchallengeable technical fashion that entities and relationships be thought of in terms of results, and generally make it hard to explore cross-agency solutions that articulate with aspects of wicked problems. Individual employment contracts and performance-based remuneration of staff, especially of managers, also reinforce this tendency, enjoining employees to give priority to their silo's concerns. On the other hand, the greater emphasis on employing more generalist managers, and the increased flexibility of movement of staff across public agencies, foster knowledge and experience more likely to be conducive to thinking broadly about the types of issues that involve wicked problems.

Thus far we have been considering how organisations *do* things. But NPM has also had implications for how they *decide* what to do. Managerialism was characterised

by the adoption of corporate strategy thinking from the private sector. Initially, this took the form of rational comprehensive planning – the very phenomenon to which Rittel and Webber's original article about wicked problems was a response. It entailed formulating corporate objectives for the organisation, delineating discrete programs related to those objectives, setting out clear outcomes for each program, drawing up action plans for achieving those outcomes, and measuring the extent of achievement after the fact at regular intervals. This model assumes that the organisation has settled goals, a supportive political environment, and control over the resources and capabilities necessary to deliver on the goals – none of which apply in the presence of wicked problems.

Despite this basic difficulty, such planning continues to be espoused officially, perhaps rhetorically, in the practice of public sector agencies. Every organisation publishes well-crafted corporate plans and reports earnestly on performance against those plans. But the further evolution of NPM into a contractualist phase has given agencies some scope to adopt less linear approaches to strategy-making in practice (Alford 2001). An important variant is the notion of strategic positioning, wherein the agency 'defines its business' in a particular way with some thought and care, but accepts the need for flexibility in how that business-definition is realised (Mintzberg 1988). Another is the idea of distinctive competence, in which the organisation seeks to position itself as a bundle of resources and capabilities which are ready and able to do particular things – for example, to be excellent at providing customer service in the welfare field. Moreover, organisations vary in the processes they utilise for developing strategies, from top-down edict-issuing to bottom-up consultative mechanisms involving all levels of the organisation in their formulation. So there is some space opening up for modes of purpose-setting and decision-making other than the rational goal-directed model. In particular, the recent trend towards more robust community consultation and stakeholder engagement by public agencies implies a greater willingness to open the processes of goal-setting and strategy development.

3. Recent strategies for addressing complexity, uncertainty and disagreement

Public management research and practice have begun to address not only the conceptual difficulties but also the practical challenges of tackling 'wicked problems' and addressing complex uncertainties. A recent government report on wicked or intractable problems (APSC 2007) suggests that the general aim of government when dealing with intractable problems would be to achieve 'sustained behavioural change' through 'collaboration' as a response to 'social complexity'. The report outlines a raft of techniques that could be employed to deal with wicked problems, emphasising that new processes and thinking are required:

- *Holistic, not partial or linear thinking* – thinking that captures the big picture and the interrelationship of policy problems. The need for this kind of thinking is a result of 'social complexity' whereby problems are seen from multiple perspectives.
- *Innovative and flexible approaches* – the need for a systematic approach to social innovation by replicating the kind of practices employed by private sector research. Focus on creating a 'learning organisation'.
- *The ability to work across agency boundaries* – as wicked problems do not conform to the constraints of organisations there is a need to work across agency boundaries.
- Increasing understanding and stimulating a debate on the application of the *accountability framework* – existing accountability frameworks may constrain attempts to resolve wicked problems.
- *Effectively engaging stakeholders and citizens in understanding the problem and in identifying possible solutions* – there is a need to understand the full dimensions of each situation through engaging with relevant stakeholders. Behavioural changes, the report suggests, are more likely if there is a full understanding of the issues by stakeholders.
- *Additional core skills* – develop skills in communication, big picture thinking and influencing skills and the ability to work cooperatively.

- *A better understanding of behavioural change by policy makers* – although the traditional ways by which governments change citizens' behaviour will still be important (e.g. legislation, regulation, penalties, taxes and subsidies), such practices may need to be supplemented with other behaviour-changing tools that better engage people in cooperative behavioural change.
- *A comprehensive focus and/or strategy* – as wicked problems have multiple causes they require sustained effort and resources.
- *Tolerating uncertainty and accepting the need for a long-term focus* – solutions to wicked problems are provisional and uncertain, and this fact needs to be accepted by public managers and Ministers. There are no quick fixes and solutions may need further policy change or adjustment. (APSC 2007: 35-6)

Public managers and researchers are actively considering a range of strategies and processes that have been suggested as ways to increase public sector capacity and effectiveness in dealing with such problems. We have already noted some limitations in both the traditional public administration approaches and in some of the new managerial approaches to efficiency and effectiveness. We have also noted the insufficiency of calls for 'more research' on knowledge gaps, even though this can be a valuable contribution both to 'evidence-informed' policy and to increasing the scope of consensus. In our view, the widely recommended focus on 'collaboration' as a process solution is important, but this is not the sole or always best option among possible responses to wickedness, primarily because collaboration does not necessarily address all aspects of the complexity dimension as we have identified it. Rather it is often more relevant to the diversity dimension. Therefore, we additionally propose two further approaches which address the complexity dimension – systems thinking; and adaptive leadership.

a. Outcomes focus / systems thinking

The focus on outcomes which has characterised recent developments in public management has, as we have seen, enabled a more expansive conception of the managerial task than previous preoccupations with inputs, processes or outputs. In particular, it allows greater room to discover alternative means of solving problems. It

does this to the extent that it displays the attributes of *systems thinking*, which we propose as one way to gain more insight into the nature of wicked problems and how to deal with them. Systems thinking entails consideration not only of outcomes but also of the whole chain, or more accurately 'web', of inputs, processes and outputs that lead to them. It includes considering not only the core production process within the relevant organisation but also the auxiliary or parallel processes occurring outside the organisation, in other organisations or in the wider society. The purpose is to search, in a relatively comprehensive way, for factors which may contribute to the nature of the wicked problem, or contribute alternatively to its being addressed.

The classic systems approach to delineating these factors is 'backward mapping' (e.g. Elmore 1980, Elmore 1985). Adapted to the analysis of wicked problems, the first step in backward mapping would be to identify a problem in tentative terms. It doesn't matter whether this is framed in ultimate or intermediate terms, since at this stage, it is by definition not possible to know the full nature of the problem. All that is needed is a starting point. From here it is possible firstly to work backwards, to compile a diagram of which factors seem most likely to 'cause' the problem in question, which other factors seem in turn to cause the first set, and so on backwards through the chain to initial factors. It is also possible to work forwards, delineating which further problems might be caused by the first initially identified, and which are caused by them in turn. This is a complex analytical task requiring judgement and iteration, but is an invaluable discipline. A simplifying intermediate step towards this task could be first to identify how – in a specific organisational setting – the existing core internal production process affects the problem. It is then possible to look for contributors to and inhibitors of this internal process, and from there trace other external contributing factors.

Having traced as much of the map as possible, a further discipline in backward mapping is to look for tensions and contradictions among factors – that is, junctures where factors that cause one aspect of the problem are at odds with factors causing others. These are most likely to be the real sources of 'wickedness' of the problem. It is also important to establish which actors are associated with each of these steps, because that will help clarify the diversity dimension of the problem.

Systems thinking is helpful in dealing with the complexity dimension of our typology of problems, but it is not an approach which in itself constitutes a method of dealing with wicked problems. Rather it is an analytical discipline which can usefully supplement the two other major approaches to be considered below: collaboration; and leadership in mobilising adaptive work.

b. Collaboration and coordination

These days, collaborative working occurs between many different types of partners and takes many different shapes (Kickert et al 1997; Wondolleck & Yaffee 2000; Mandell 2001; Agranoff and McGuire 2003; Goldsmith & Eggers 2004; Imperial 2004). Collaboration[1] can occur between two or more government organisations (sometimes referred to as 'joined up government) within the same or different levels of government, or between government organisations and private firms and/or voluntary/non-profit/community organisations. It can entail the partners playing different mixes of the roles of specifying/arranging services, delivering them and paying for them (Savas 1987). It can be based on greater or lesser degrees of contractual formality. At its core, however, is some degree of mutual trust and commitment.

The presence of collaborative relationships is likely to enhance the understanding and addressing of those wicked problems in which there are multiple parties with differential knowledge, interests or values. Where it is operating effectively, collaboration helps in the addressing of wicked problems in three ways. *Firstly*, the presence of functioning co-operative networks increases the likelihood that the *nature of the problem* and its underlying causes can be better understood. A wider array of actors can offer more diverse insights into why a situation has arisen. *Secondly*, collaboration increases the likelihood that provisional *solutions to the problem* can be found and agreed upon, not only because a wider network offers more insights, but also because greater co-operation improves the chances of

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[1] We recognise the important distinctions between cooperative, coordinative and collaborative approaches (Keast et al 2004), but these conceptual issues are not central to the focus of this discussion.

diverse parties (who may have differing interests concerning the issue) coming to an understanding about what to do. *Thirdly*, it facilitates the *implementation of solutions*, not only because the parties are more likely to have agreed on the next steps, but also because it enables mutual adjustment among them as problems arise in putting the agreed solution into practice.

A number of characteristics of collaborative arrangements enable these effects to be realised. Collaborative networks can tap into a wider body of specific *knowledge and skills* than can unilateral decision-makers. The broader array of parties within such networks may bring to the co-operative arena different and in some cases complementary expert knowledge, based on their professional and other training, and situational knowledge, based on their social or institutional location. To the extent that some of the parties have experience in dealing with collaborative arrangements, they may also bring useful skills concerning the establishment and maintenance of working relationships.

Of course, there is no guarantee that these different bits of knowledge will come together in a fruitful fashion. In particular, parties with conflicting interests may wield their knowledge to engage in gaming behaviour; indeed, this may very well be part of what makes the problem 'wicked'. Consequently, two other characteristics of collaborative arrangements are also necessary to enable this knowledge to be brought to bear upon intractable problems.

The first is the fact that collaborating parties are more likely to engage in *communication*, as a normal part of their collective endeavour. This means there will be more circumstances arising in which parties serendipitously mention things which may be symptoms of wicked problems, increasing the likelihood that someone may 'put 2 and 2 together' and discern an underlying issue. In a similar fashion, communication among the parties increases the likelihood of them engaging in problem-solving behaviour and finding ways forward, for example by identifying 'win-win' solutions, which typically depend on contending parties revealing pieces of information about their own situation and preferences. Communication also assists in the processes of mutual adjustment as problems arise in implementation. Where the

perspectives of parties are far apart, an intensive process of mediation and facilitated dialogue may be necessary to allow these views to be adequately voiced as a basis for further negotiation and seeking common ground (Forester 1999; Lewicki et al 2003).

The other characteristic of collaboration which assists in dealing with wicked problems is that it entails a degree of *trust* and mutual commitment among the parties (Bardach 1998; Alford 2002). This increases the probability that parties will feel comfortable about revealing information that may make them vulnerable to opportunistic behaviour by other parties. To the extent that they trust each other, actors will be more likely to take the risk of disclosing such information, thereby enhancing the extent to which differential knowledge is brought to bear on the problem. They are also more likely to proceed with collaborative courses of action to tackle such problems where they are dependent on the trustworthiness of others. Trust is therefore an important foundation stone for harnessing collaborative working to address wicked problems.

However, although trust is necessary for collaborative arrangements, it is also very difficult to establish and build, especially in the public sector. Ideally, for trust to grow it is necessary for parties to avoid reneging on undertakings and more positively to make and reciprocate positive gestures (or 'gifts', in the language of Titmuss). The trust-building effects of these actions take time to be realised. They also require some autonomy on the part of the people in the relationship. These conditions can be difficult to maintain in the context of a public sector which is prone to turbulence (which can lead to reneging and lack of consistency over time), and where accountability regimes can hamstring the manager's ability to avoid reneging or to engage in reciprocity, and reduce their autonomy. Indeed, these characteristics of the public sector may in themselves constitute part of the 'wickedness' of some situations. To a degree, their effect on collaboration and trust-building can be ameliorated, but not entirely eliminated, by devices such as risk management, staff development, flexible organisation structures, and conscious attention to managing the authorising environment.

In summary, collaboration provides in particular a means of addressing the diversity dimension in our typology of problems, since it offers one way of recognising and engaging the multiplicity of actors affecting the 'wickedness' of a problem. But it can be difficult to set up and sustain in a public sector context subject to turbulence and accountability rules.

c. Mobilising adaptive work

The third approach comes from the field of leadership studies, and draws on Heifetz' view of leadership as the mobilisation of adaptive work. Heifetz (1994) developed his approach by way of a critique of the dominant orthodoxy in leadership studies, represented by writers like Jaques (1991), Kotter (1990, 1996) or Kouzes and Posner (1987). According to this orthodoxy, a leader has two key roles. One is to frame a vision (or set a direction, shape purposes or fashion a strategy) for the organisation – usually implying an ability to recognise what is wrong with 'where we are now'. The other role is to get others to pursue that vision/direction/purpose/strategy, by inspiring, enabling and empowering them to do so. Heifetz challenges the assumptions underlying the first of these roles, which implies that a leader should be capable of diagnosing problems and devising solutions to them. Heifetz pointed out that leaders quite often encounter situations where it is beyond the cognitive capacities of any one person to identify what is wrong and determine ways of addressing it. The knowledge and insights relevant to the issue are instead distributed among those who are led. Moreover, the situation may pose difficult issues for those who are led, confronting them with the need to make major accommodations with a new reality. These are what he calls 'adaptive challenges', which happen to be very common for public sector leaders. Although Heifetz doesn't use the term, he is effectively talking about wicked problems.

Heifetz proposes that these situations require the leader not to hand down a strategic pathway forward from on high and call on the led to 'follow me!', but rather to engage in a process he terms the mobilising of adaptive work. The public manager goes beyond the traditional notion of top-down direction. S/he instead leads organisational members and/or stakeholders *themselves* doing the collective work of

identifying the problem and developing ways to deal with it. In effect, those who are led are asked to perform the shared leadership role of setting a direction.

Of course this is a complex process, and one which requires particular leadership skills on the part of the leader, but different from those in the orthodox model. What makes it especially difficult is that employees expect the leader to provide them with a direction; they get anxious when challenged to do this for themselves. The leader's role, therefore, is not only to challenge people to do this work, but to provide the right circumstances in which it might thrive. Heifetz calls these circumstances a 'holding environment' – a place (such as a deliberative forum, or a set of agreed behavioural ground-rules) for containing the stresses of organisational members' adaptive efforts (1994: 103). The leader needs to steer a delicate course between provoking people to examine uncomfortable issues and having them cope with the stress this engenders. Thus the role is not one of setting a direction for others and getting them to follow it, but rather of 'identifying the adaptive challenge, keeping distress within a productive range, directing attention to ripening issues and not diversions, giving the work back to the people, and protecting voices of leadership' (1994: 207).

Mobilising adaptive work is therefore relevant to both of the dimensions of our typology of problems. It offers a way of addressing the complexity dimension by bringing forth knowledge which is beyond the compass of the leader acting alone. And it deals with the diversity dimension by involving multiple parties in a manner which not only brings out their differential knowledge but also enables the surfacing of contending values and interests, and dialogue between those in whom they reside.

4. Conclusions and implications

These three methods provide promising ways of approaching the task of conceptualising, mapping, and responding to wicked problems. But they sit awkwardly, if not impossibly, with the conventional structures and systems of the public sector. By and large, they entail a much greater focus on targeted interventions or major problem-solving projects with limited life-spans, than on the

everyday world of mainstream settled programs or ongoing functional areas. Project management for targeted interventions is now something with which most modern public services have experience, but in its application to wicked problems it calls for a degree of flexibility in the structures and systems within which it operates.

Firstly, such an approach is likely to be easier to establish and adapt if the *organisational structure* is flexible. Typically this involves some form of matrix structure, in which staff have a 'home' responsibility to a particular function or program, but it is understood that they may from time to time be redeployed or 'out-posted' to a temporary strategic project.

Secondly, it calls for more flexible *budgeting and financial systems*, in which it is possible to budget for outcomes, outputs or processes, to 'pool' budgets, and to devolve the authority to make limited reallocations closer to project management level. This also requires some attention to resolving joint accountability issues.

Thirdly, it calls for a more sophisticated approach to *performance measurement*. Typically this should focus more on the results end of the program logic, since this allows more flexibility as to the processes by which outcomes are achieved, but it should also recognise the long lead times often required to address wicked problems, through greater focus on evaluating intermediate or precursor steps.

Fourthly, it calls for more emphasis, in *recruitment, promotion and staff development* processes, on knowledge, experience and skills suitable to working in more open-ended, collaborative and adaptive situations.

Finally, it calls for a cultural shift from a risk-averse culture, built on the politics of attributing blame to individuals for failure, towards a *collective learning culture* built on collaborative discussion of goals, strategies, monitoring and adjustment of program settings as knowledge and understanding evolve and as the perspectives of stakeholders shift over time.

These changes require rebuilding the capacity of the public sector in important ways.

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