Policy & Politics • vol 43 • no 2 • 291-311 • © Policy Press 2015 • #PPjnl @policy_politics
Print ISSN 0305 5736 • Online ISSN 1470 8442 • http://dx.doi.org/10.1332/147084414X13992869118596

research provocations

From tools to toolkits in policy design studies: the new design orientation towards policy formulation research

Michael Howlett, howlett@sfu.ca
Simon Fraser University, Canada, and
National University of Singapore

Ishani Mukherjee, National University of Singapore

Jun Jie Woo, Singapore University of Technology and Design

A roadmap for 'new policy design' studies now exists in the orientation which has emerged in recent years towards the formulation of complex policy mixes. The new design orientation focuses on bundles or portfolios of tools and the interactive effects which occur when multiple tools are used over time in policy packages designed to address multiple goals, and upon more complex multi-policy and multi-level design contexts. This review article examines the differences between the 'old' instrument orientation and the 'new' design one, setting out the current research agenda in this field and its rationale.

key words public policy • policy design • policy tools • policy instruments • governance

Introduction: the new policy design orientation in policy formulation research

Policy design involves the deliberate and conscious attempt to define policy goals and connect them to instruments or tools expected to realise those objectives. Policy design, in this sense, is a specific form of policy formulation based on the gathering and application of knowledge of the effects of policy tool use on policy targets to the development and implementation of policies aimed at the attainment of desired policy ambitions (Weaver, 2009; 2010; Bobrow and Dryzek, 1987; Bobrow, 2006; Montpetit, 2003). In a time when policymakers are tasked with developing innovative solutions to increasingly complex policy problems, the need for intelligent design of policies and a better understanding of the policy formulation processes they involve has never been greater.

In a design orientation towards formulating policies, these processes begin with the analysis of the abilities of different kinds of policy tools to affect policy outputs and outcomes and the kinds of resources required to allow them to operate as intended (Hood, 1986). This instrumental knowledge is contextual in the sense that

understandings of how the use of specific kinds of instruments affects outcomes such as levels of target group compliance includes consideration of many constraints on tool use originating in the limits of existing knowledge, prevailing governance structures, and other arrangements which may preclude certain options and promote others.

Despite this caveat, however, a means–ends understanding of policy formulation permeates the policy design orientation (Tribe, 1972; Colebatch, 1998). Although acknowledging that policy-making does not always necessarily lend itself to or result in purely instrumental thinking about policy issues, this instrumental orientation is significant in policy design studies and policy formulators are expected to base their analyses on logic, knowledge and experience rather than, for example, purely political calculations or bargaining or other forms of satisficing behaviour (Sidney, 2007; Bendor et al, 2009).

Of course, this does not preclude recognition and acceptance of the fact that some policy decisions and formulation processes are in fact made in a much more highly contingent and irrational fashion in which 'design' considerations may be more or less absent (Sager and Rielle, 2013). The extent, however, to which considerations such as political gain or blame avoidance outweigh instrumental factors is thought to be an empirical question whose answer varies in different formulation circumstances and contexts but, in general, is negative (Hood, 2010).

That is, policy scholars interested in policy design have argued for several decades that (a) in most instances processes of policy formulation are governed less by political considerations than they are by concerns about efficiency and effectiveness in practice which lead policy-makers to think more systematically and analytically about their options and alternatives (Bobrow and Dryzek, 1987; Bobrow, 2006) and, (b) even when policy processes are more contingent, the design of a policy, conceptually at least, can still be divorced from its actual creation, highlighting the continued need for design considerations and understandings of the nuances and requirements of policy formulation involved in translating ideal-type models into context-sensitive solutions to public problems (Linder and Peters, 1988; Wintjes, 2007).

Policy design studies in this sense thus deal with the vagaries of policy formulation by separating out two dimensions of the design experience: on the one hand the exploration of the procedural aspects of design – the specific types of policy formulation activities which lead to design rather than some other form of policy generation – and the substantive – that is, the substance or content of the design itself. This is the policy-relevant articulation of the well-known distinction in design studies generally[1] between 'design-as-verb' ('policy formulation') and 'design-as-noun' (policy tools and instruments).

The academic enquiry of policy design – that is, self-consciously dealing with both policy processes and substance under an instrumental rubric – emerged and flourished throughout the 1970s and 1980s (see for example, Salamon, 1981; 1989; 2002a, 2002b) although policy design studies have been undertaken since at least the 1950s (Tinbergen, 1952; Dahl and Lindblom, 1953; Kirschen et al, 1964). Most of the early studies focused on policy tools and had a strong focus on policy implementation issues and processes, paying much less attention to policy development or formulation issues which are the hallmark of current studies (Hood, 1986; Hood and Margetts, 2007).[2]

This orientation towards policy studies, however, declined after 1990. This was largely due to the emergence of alternative globalisation and governance discourses and research agendas which shifted attention towards events occurring at the

international and meta-societal levels which were often seen by proponents to dictate domestic policy tool choices, making their detailed analysis unnecessary or redundant (Howlett, 2011; Howlett and Lejano, 2013; Jordan et al, 2013). That is, the emergent globalisation and governance literatures argued that instrument choices were more or less preordained by meta-level changes in the relationships existing between states, markets and civil society organisations which favoured the latter two and therefore reduced the significance and the need for sophisticated and lengthy analysis of the former (Rhodes, 1996; Kooiman, 2000).

Studies in this vein promoted the use of particular types of tools – mainly market- and network-based ones – regardless of context and with little regard for the appropriateness of their selection or consideration of how they might interact with pre-existing tools (Howlett and Lejano, 2013). Difficulties with both the formulation and implementation of policy proposals based on such conceptions, however, led to a spate of more recent studies (see for example, Jarvis, 2011; Ramesh and Howlett, 2006; Ramesh and Fritzen, 2009) which have sought to re-assert the centrality of the role of government in policy formulation and implementation (Capano, 2011; Koch, 2013) and the continuing importance, and need for, better policy designs and understandings of design processes.

As Junginger (2012) recently argued, a significant research agenda remains in the 'new policy design orientation'. At the present time, she has argued, we continue to know too little about many important aspects of design work, especially about the nature of policy formulation or 'the actual activities of designing that bring policies into being – of how people involved in the creation of policies go about identifying design problems and design criteria, about the methods they employ in their design process' (p 3).

In order to help address these limitations and contribute to the re-invigoration of a design orientation in modern policy studies, this review article traces the origins of the current policy design literature and assesses the state of the field of policy design thinking in recent years. It distinguishes between the 'old' orientation in design studies (that preceding the globalisation and governance turn) and the new orientation that is currently emergent. It maintains that the latter deals with more complex tool preferences than the former and also devotes more attention to the temporal processes which have brought existing policy tool mixes into being. These have led policy design studies to enter into new territory in terms of the theory and practice of policy formulation and to move well beyond the studies of single policy tools and policy implementation which informed earlier design work.

The general principles of the policy design orientation: knowledge mobilisation for the public good

The modern policy studies movement began with the recognition that public policy-making results from the interactions of policy-makers in the exercise of power, legitimate or otherwise (Lasswell, 1958; Arts and van Tatenhove, 2004; Stone, 1988). Although some of these policy-making efforts could be seen to be arbitrary or capricious, most were viewed as representing the concerted efforts of governments to act instrumentally; that is, to achieve a particular policy goal or end through the use of a relatively well-known set of policy means developed over many years of state-building and experience (Lasswell and Lerner, 1951). It was acknowledged

that these goals can be wide-ranging and often posed no small amount of difficulty and complexity in both their definition and diagnosis, with the implication that the formulation of solutions that were likely to succeed in addressing them necessitated the systematic consideration of the impact and feasibility of the use of specific kinds of policy means or instruments (Parsons, 1995; 2001).

This early work thus depicted policy design as a specific kind of policy-making in which knowledge of the policy impacts of specific policy tools was combined with the practical capacity of governments to identify and implement the most suitable technical means in the effort to achieve a specific policy aim. This activity was expected to occur *ex ante* and independently of other considerations such as political or personal gain which might also affect formulation processes. This 'design' activity was recognised as requiring a situation where there was support for policy analysis and design work on the part of policy-makers and also a low policy 'lock-in' on existing tool arrangements. Such favourable design circumstances had to be coupled with the presence of a high level of technical capacity and expertise on the part of policy analysts if knowledge was to be mobilised effectively so that policy instruments were effectively and efficiently matched to policy goals and targets (Howlett, 2009; 2011; Dunlop, 2009; Radaelli and Dunlop, 2013; Howlett and Rayner, 2013).

When all such conditions are present, purposive design activity was thought to be possible, much as is the case in the current era with such recent efforts at knowledge mobilisation as 'evidence-based policy-making' (Bhatta, 2002; Locke, 2009). When they are not, less technical and more overtly political forms of policy-making were thought more likely to ensue (Davies, 2004; Moseley and Tierney, 2004; Howlett, 2009). The fervent wish of proponents of the early design orientation was to reduce the latter instances to as few as possible by promoting the kinds of orientations and dedication of resources required for the former in the belief that better designed policies are more likely to solve pressing problems, correct social ills and serve the public good (Bobrow, 2006; Azuela and Barroso, 2012).

The historical trajectory of policy design studies: from the 'old' instrument studies to the 'new' policy design orientation

Studies of policy design with this general orientation towards policy-making began with the very origins of the policy sciences where many pivotal early works contained within them the idea of improving policy outcomes through the systematic application of knowledge to policy formulation activities (Lasswell and Lerner, 1951; Wildavsky, 1979; May, 2003). In his foundational work on the policy sciences, for example, Harold Lasswell argued for the separation of the processes of policy formulation from decision-making and implementation, highlighting the centrality and significance of policy instruments and instrument choices made in the formulation process for policy outcomes and arguing for the need to bring interdisciplinary knowledge to bear on the development of the appropriate means to resolve public problems and issues (Lasswell, 1954).

For the 'old' policy design studies which emerged from this foundational work, the historical and the institutional context of policy-making was seen to bear significant weight in policy formulation, and this was often argued to be determinant of both the content and activities of designs and designing (Clemens and Cook, 1999). In this view, as the policy context and conditions changed and evolved, so too did the set of

policy means or alternatives which were deemed acceptable or feasible by an evolving set of policy actors involved in policy-making, themselves informed by shifting ideas and calculations of the appropriateness of a particular design and its consequences (Majone, 1975; 1976; March and Olsen, 2004; Goldmann, 2005; Howlett, 2011).

The highly contextual orientation of early policy studies (Torgerson, 1985; 1990) led some policy scholars in the 1970s to argue that policy decisions were by nature the result of processes so highly contingent and fraught with uncertainty that decision-making would invariably involve a high degree of 'irrationality'; that is, be informed more by the opportunistic behaviour of decision-makers within fluid policy-making contexts than by careful deliberation and 'design' thinking (Lindblom, 1959; Cohen et al, 1979; Dryzek, 1983; Kingdon, 1984).[3] This led some to express serious doubts that policy could truly be 'designed' in the way that proponents of a policy design orientation advocated (Dryzek and Ripley, 1988; deLeon, 1988).

Many other scholars, however, questioned the extent of this emphasis on contextuality and contingency (Dror, 1964) and in a series of path-breaking articles in the 1980s and early 1990s authors such as Linder and Peters (1984; 1988; 1990a, 1990b, 1990c, 1990d; 1991) sought to re-orient design studies by arguing that the process of policy designing as a type of formulation activity was conceptually distinct from a policy design, in the same way that an analytical distinction can be made between the development of an abstract concept or plan in architecture and the manifestation of that conception through engineering and construction practices followed on the ground (Schön, 1988; 1992).

Incorporating this distinction between design-as-formulation and design-as-policy-content, design studies in the 1980s shifted from the study of 'designing' to the study of 'designs' themselves, with a specific focus on better understanding how individual implementation-related policy tools and instruments such as taxes and subsidies or regulation and public ownership operated in theory and practice (Sterner, 2003; Woodside, 1986; Mayntz, 1983). This marked the beginning of modern studies of policy tools. This tools orientation sparked interest in a range of related subjects, such as the study of implementation failures, policy success, and the linkages connecting the two: with policy scholars turning their attention to the description and classification of alternative implementation instruments and the factors which conditioned their effective use and deployment (Mayntz, 1979; O'Toole, 2000; Goggin et al, 1990).

At this time, for example, Bardach (1980) and Salamon (1981) went so far as to argue that the definition of policy in terms of 'issues' or 'problems' originally made by scholars at the outset of the policy studies movement (Mintrom, 2007) was misguided and that policy should instead have been defined from the start in terms of the 'instruments' used in policy-making. They advocated shifting the focus of policy studies squarely towards the study of the design and operation of such tools, later defined to include both traditional 'substantive' tools such as regulation and public ownership and more 'procedural' ones such as the use of advisory commissions and public participation exercises (Howlett, 2000).

Students of public policy making were joined in this effort by scholars of economics and law who studied the evaluation of policy outputs in terms of their impacts on outcomes as well as the role of law and legislation in effecting policy tool choices and designs (Stokey and Zeckhauser, 1978; Bobrow and Dryzek, 1987; Keyes, 1996). Studies in management and administration at the time also sought to explore the linkages between politics, administration and implementation in the effort to better

understand policy tool choices and patterns of use (Trebilcock and Hartle, 1982). Researchers also looked at how policy instrument choices tended to shift over time (Lowi, 1966; 1972; 1985), examples of which during this period included the rise of privatisation and deregulation (Howlett and Ramesh, 1993) and the first wave of governance thinking advocating the use of network management or non-governmental tools (Peters and Pierre, 1998).

By the early 1980s, this tools literature was merged with the policy design orientation and emerged as a body of policy design literature in its own right. Students of policy design consequently embarked upon theory building, developing more and better typologies of policy instruments that sought to aid the conceptualisation of these instruments and their similarities and differences and attempting to provide a greater understanding of the motivations and reasons underlying their use (Salamon, 1981; Tupper and Doern, 1981; Hood, 1986; Bressers and Honigh, 1986; Bressers and Klok, 1988; Trebilcock and Hartle, 1982).

Other scholarly work during this period continued to further elucidate the nature and use of specific policy tools such as 'command-and-control' regulations and financial inducements such as tax incentives (Landry et al, 1998; Tupper and Doern, 1981; Hood, 1986; Vedung et al, 1997; Howlett, 1991). In general it was believed that a greater understanding of implementation instruments and the reasons underlying instrument choice would benefit policy design both as a practice and a theoretical body of knowledge, contributing to more positive policy outcomes (Woodside, 1986; Linder and Peters, 1984; Mayntz, 1983). Studies on pollution prevention and professional regulation conducted at the time, for example, benefited from advances in the systematic study of policy instruments which influenced the design and creation of new alternative instruments in these and other fields (Hippes, 1988; Trebilcock and Prichard, 1983).

While most work focused on tool design, constructivist and behavioural perspectives were also brought to bear on the formulation processes involved in policy designing, most prominently in Schneider and Ingram's (1990a; 1990b; 1994) studies of policy targets and their behaviour. These provided a deeper understanding of the social and behavioural factors underpinning the use of specific kinds of policy designs in practice. Subsequent contributions by these authors as well as other scholars working in a similar vein would further advance the study of the behavioural aspects of the design process (Ingram and Schneider, 1990; Schneider and Ingram, 1997; Mondou and Montpetit, 2010; Timmermans et al, 1998; Hood, 2007).

In a very important development in the late 1990s some scholars began to progress from the study of single instrument uses to that of more complex multi-tool 'policy mixes' (Grabosky, 1994; Gunningham et al, 1998; Howlett, 2004). However, the late 1990s and early 2000s also saw a substantial shift in scholarly attention towards the more 'meta' level of policy institutions, sparked by the emergence of globalisation and its preference for market-based tools as well as the start of 'governance' studies undertaken in Europe and elsewhere which emphasised the role of non-state actors – especially networks – in policy-making (Howlett and Lejano, 2013). This 'globalisation and governance turn' perpetuated a polarity in discussions between, for example, instruments of the 'market' and the 'state' or dichotomous governance styles such as 'hierarchies' and 'markets', which failed to deal appropriately with the reality of policy formulation and design in most sectors (Howlett, 2004; Howlett, 2011; Koch, 2013).

The research agenda of the 'new' policy design studies

It is only recently that policy design has re-emerged as a distinct field of inquiry as the merits of the older tools orientation were re-discovered following the failure in many jurisdictions of the overly simplistic design precepts put forward by advocates of globalisation and governance thinking (Tollefson et al, 2012; Hay and Smith, 2010; Jarvis, 2011). This renewed policy design orientation is different from its predecessor, however. Like the former, it continues to advocate the construction and analysis of ideal arrangements of policy components that can then be adapted to meet the bounds of a particular context in order to result in particular outcomes (Hood, 2007; Hood and Margetts, 2007). Unlike the older orientation, however, its focus is less on individual tools and more on 'toolkits' or multiple tools and tool mixtures used to address many problems, and it has especially tried to come to terms with how these mixes evolve over time.

That is, studies informed by the new design orientation now deal not only with conventional research questions such as the nature of (single) policy tools and instruments (Stavins, 1996; Sterner, 2003) but also with questions about the design of policy mixes, or the 'toolbox' questions which the earlier literature neglected. These studies are especially interested in the different means and patterns through which policy mixes evolve over time (van der Heijden, 2011, Thelen et al, 2003; Kay, 2007; Feindt, 2012). Studies have also delved more deeply than before into the behavioural characteristics of designers (Considine, 2012) and into the location and activities of different kinds of advisors and experts involved in policy formulation activities (Craft and Howlett, 2012).

Three of the basic questions the new design orientation grapples with today are set out below.

Dealing with complex multi-tool policy designs

The first area where the old and the new orientations diverge substantially, as mentioned above, pertains to the complexity of the designs considered and evaluated. Where the 'old' tools orientation concentrated for the most part on single policy instruments and goals, the new design orientation has engaged more directly in the discussion and evaluation of integrative policy mixes, where multiple instruments and multiple governments and objectives are arranged together in complex portfolios of policy goals and means (Gunningham et al, 1998; Doremus, 2003; Briassoulis, 2005; Howlett, 2011; Yi and Feiock, 2012; Peters et al, 2005; Jordan et al, 2011; 2012), often with a multi-level governance component (del Río and Howlett, 2014).

As mentioned above, works on 'smart regulation' such as those by Gunningham, Grabosky and Sinclair (1998) had already led tools-oriented scholars to focus on how instruments within a policy mix or 'portfolio' could complement each other or conversely, lead to conflicts, resulting in guidelines for the formulation of more sophisticated policy designs in which complementarities were maximised and conflicts avoided (Buckman and Diesendorf, 2010; Roch et al, 2010; Barnett and Shore, 2009; Blonz et al, 2008; del Río et al, 2010). While this work has continued, concerns regarding how to make the most of policy synergies while curtailing contradictions in the formulation of new policy packages has become a major topic of investigation within the new design orientation (Hou and Brewer, 2010; Kiss et al, 2012; Lecuyer

and Quirion, 2013). Current research builds on this foundation and asks questions such as those related to how some combinations may contain redundant elements while others, albeit with repetitive elements, may be beneficial in promoting resiliency and adaptiveness (Braathen and Croci, 2005; Braathen, 2007a; Swanson et al, 2010; Walker et al, 2010).

Understanding policy design in space and time

A second area in which contemporary research is engaged is with understanding and demarcating 'design spaces' (Howlett, 2011). As early as, 1991, Linder and Peters (1991) had suggested that policy design could be thought of as oriented towards the understanding of such spaces. This involves constructing an inventory of potential public capabilities and resources that might be pertinent in any policy formulation situation. Research work in the new design orientation updates older work in this area (for example, Anderson, 1975) in the context of the study of more complex policy portfolios raised above.

Understanding how such processes operate is a subject of interest in current studies (Hickle, 2013; Howlett and Rayner, 2013). For example, a major concern of those working in the new orientation is whether combinations of different policy instruments, which have evolved independently and incrementally, can accomplish complex policy goals as effectively as more deliberately customised portfolios (Howlett, 2014a).

In general, as the old design studies noted, policy formulation takes place within pre-established governance structures and an existing policy logic (Howlett, 2009; Meuleman, 2009a; 2009b). The old design orientation, taking this 'boundedness' as a given, worked with a restricted number of alternatives that could be deemed feasible in such a context, decreasing the universe of policy alternatives to smaller sets of workable possibilities (Christensen et al, 2002). The new design orientation, however, points out that even this activity necessitates a capacity to complement 'text with context' (Lejano and Shankar, 2013) and that identifying the limits and prospects afforded designers within the existing policy design space is necessary but also problematic.

Thus the 'elbow room' or 'degrees of freedom' designers have to manoeuvre in given policy design contexts is another subject of much interest (Howlett and Rayner, 2013). Determining exactly what capacities are required in order to develop and implement complex designs is also a subject of much interest in the field today (Considine, 2012). In order to address these issues, it is recognised that policy designers need to be cognisant about the internal mechanisms of their polity and constituent policy sectors (Braathen and Croci, 2005; Braathen, 2007a, 2007b; Grant, 2010; Skodvin et al, 2010).

Figure 1 presents a schematic illustrating contemporary thinking about how the elements of a policy design space, including the presence of significant policy legacies, can affect whether or not policy changes are introduced with a design or non-design orientation and, within such a design orientation, whether design is likely to occur by whole measures ('packaging') or in part ('patching').

As this figure shows, in any specific design circumstance whether or not 'design' takes place at all can be seen to depend on the aim and intention of government to undertake systemic thinking on a subject. Having such an intention is, however, not enough in itself to promote alternative designs since this also depends on the government's ability or capacity to alter the status quo. In many circumstances, even

when a design intent is present, the difficulties associated with altering the status quo results in design through 'patching' or layering rather than packaging.

Figure 1: Types of policy formulation: situating design spaces

		Government's ability to alter the status quo	
		Hi	*Lo*
Government's intention to design	*Hi*	Optimal design space • design via packaging	Incremental design space • design via patching
	Lo	Muddling through non-design space • formulation through incremental adaptation	Static non-design space

Taking the temporality of policy formulation seriously

This analysis highlights a third important research area in the new policy design studies. This deals with better understanding the temporal processes through which designs and design spaces evolve. Where the old design orientation often assumed a constrained yet blank slate available to policy designers, newer design thinking is rooted more in empirical experience that has generally shown policy designers having to work in spaces with already established policy mixes and significant policy legacies. Such thinking draws heavily on the work of historical and sociological neo-institutionalists such as Kathleen Thelen (Thelen et al, 2003; 2004) who noted how macro-institutional arrangements have normally been less the product of calculated planning but rather the result of processes of incremental modifications or reformulations such as 'layering' or 'drift'.[4]

Like these historical neo-institutionalists, many in the new policy design orientation have argued that policy mixes are often the result of similar transformation pathways – such as layering – that can easily lead to internal contradictions between tools and goals within policy mixes (Hacker, 2005). Mixes may emerge over long stretches of time as a result of earlier policy decisions. As a result, even when the initial logic of these decisions matching policy tool and target may have been clear, through multiple layering processes they can gradually transform into degenerated mixes over time (van der Heijden, 2011; Bode, 2006; Howlett and Rayner, 1995; Orren and Skowronek, 1998; Rayner et al, 2001; Torenvlied and Akkerman, 2004; Hacker, 2005).

Optimising the choice of instruments in such mixes requires an additional level of knowledge of instrument–goal interactions and considerations of both long- and short-term processes of policy change. Scholars in the new design orientation, for example, are concerned with how 'unintended' policy mixes, created and limited by historical legacies, can be hampered due to internal inconsistencies, whereas other policy instrument groupings can be more successful in creating an internally supportive combination (Howlett and Rayner, 2007; Grabosky, 1994; Gunningham et al, 1998; del Río, 2010).

That is, in addition to questions relating to the integration of policy tools and understanding design spaces, the evolution and history of policy mixes are also of concern to the new generation of design thinkers. While the old orientation tended

to suggest that design could only occur in spaces where policy packages could be designed 'en bloc' and 'de novo', the new orientation recognises that most design circumstances involve building on the foundations created in another era and working with sub-optimal design spaces (Givoni et al, 2013; Taeihagh et al, 2013). In such situations, policy designers are faced with the added issue of redesigning existing regime elements but in the context of a design space which has been altered by remnants of earlier policy efforts. This context 'lock in' can have an impact on the formulation process by restricting a government's ability to evaluate alternatives and plan or design in an effective manner (Howlett, 2009; Oliphant and Howlett, 2010; Williams, 2012).

In such situations of significant policy legacies, 'designers often attempt to patch or restructure existing policy elements rather than propose alternatives de novo although the situation may require the latter for the sake of coherence and consistency in the reformed policy mix' (Howlett, 2014; see also Gunningham and Sinclair, 1999; Thelen et al, 2003; 2004; Eliadis et al, 2005). New policy design scholars are thus very interested in processes such as how policy formulators, like software designers, can issue 'patches' to correct flaws in existing mixes or allow them to adapt to changing circumstances (Rayner, 2013; Howlett, 2014, Howlett and Rayner, 2014). They are also interested in related subjects such as how policy experiments can help reveal the possibilities of re-design (Hoffman, 2011) or how building temporal properties into tool mixes – 'adaptive policy-making' (Swanson et al, 2010) – can make designs more flexible or resistant to shifting conditions (Walker et al, 2010; Haasnoot et al, 2013).

Conclusion

Transforming policy ambitions into practice is a complex process. Historically the efforts of policy makers often have failed due to poor designs which have failed adequately to incorporate this complexity into policy formulation (Howlett, 2012; Cohn, 2004). These experiences have led to a greater awareness of the various obstacles that can present themselves to policy design and have gradually fuelled understandings of the unique characteristics of policy formulation processes and the design spaces in which design efforts are embedded.

The new design orientation calls for a broadening of thinking about design beyond policy tool choices, examining combinations of substantive and procedural instruments and their interactions in complex policy mixes. It also has focused on more detailed study of the actual formulation processes involved in tool and design choices as these occur and evolve over time (Linder and Peters, 1990a; Schneider and Ingram, 1997; Considine, 2012).

These studies have obvious theoretical and practical consequences for making and understanding public policies (Braathen and Croci, 2005; Braathen, 2007a; Grant, 2010; Skodvin et al, 2010). Environment and energy policy were among the sectors that remained engaged in design studies during the governance and globalisation phase of the late 1990s to early 2000s (Jordan et al, 2013) and work in this area continues to lead studies and applications in the new design orientation. These studies also have paedagogical consequences. Rather than be confined within the technical and capacity restrictions of their policy design space, for example, policy designers are now urged to 'be familiar not only with the technical aspects of the menu of instruments before

them, but also with the nature of the governance and policy contexts in which they are working' (Howlett, 2014).

The future research agenda for scholars in the new design orientation thus includes many related subjects. As set out above, three of the subjects of much current interest include outlining principles of design quality in complex multi-tiered mixes, and understanding design spaces, their evolution, and the evaluation of different kinds of design processes associated with them.

Recent forays discussing policy design quality are especially promising for both scholars and practitioners. These include the detailing of several 'first principles' for policy mix or 'toolkit' design that ponder the characteristics of evaluative criteria to discern whether design is being done well or poorly; such as notions of 'maximising complementarity' and 'goodness of fit' with existing governance arrangements with which contemporary design theory is grappling (Howlett and Rayner, 2013). These and other subjects are the objects of many ongoing research programmes in the new design orientation and it is certain that new insights into these areas of policy-making will continue to emerge in the near future.

Notes

[1] This is similar to the general orientation towards design found in other fields such as architecture, urban planning or industrial design. See Hillier et al, 1972; Hillier and Leaman, 1974; Gero, 1990.

[2] Of course, not all work on policy instruments has restricted itself to implementation issues. Work on the exploration of 'instrumentation' for example, has considered larger issues about feedback processes from instrument choices to the politics of policy formation, as has some work on instruments and network governance (see Lascoumes and Le Gales, 2007 and de Bruijn and ten Heuvelhof, 1997). However these can still be distinguished from the new design studies, given the latter's almost exclusive emphasis on formulation and its resulting concern for understanding the inherent nuances involved in developing mechanisms for meeting policy goals, couched within contextual realities, which the former studies still lack.

[3] Of course this is a view some continue to hold. See for example Eijlander, 2005; Franchino and Hoyland, 2009.

[4] New institutionalists attribute these processes to the evolution of institutions which, they argue, are manifested into policy (Kay, 2007; van der Heijden, 2011). In the new design orientation, these processes are seen as also applying to the formation of bundles of policies.

References

Anderson, JE, 1975, *Public policymaking*, New York: Praeger

Arts, B, Van Tatenhove, J, 2004, Policy and power: A conceptual framework between the 'old' and 'new' policy idioms, *Policy Sciences* 37, 339–56

Azuela, GE, Barroso, LA, 2012, *Design and performance of policy instruments to promote the development of renewable energy: Emerging experience in selected developing countries*, Washington, DC: World Bank Publications

Bardach, E, 1980, Implementation studies and the study of implements, Paper presented to the *American Political Science Association*

Barnett, CK, Shore, B, 2009, Reinventing program design: Challenges in leading sustainable institutional change, *Leadership and Organization* 30, 1, 16–35

Bendor, J, Sunil, K, Siegel, DA, 2009, Satisficing: A 'pretty good' heuristic, *The BE Journal of Theoretical Economics* 9, 1, doi:10.2202/1935-1704.1478
Bhatta, G, 2002, Evidence-based analysis and the work of policy shops, *Australian Journal of Public Administration* 61, 3, 98–105
Blonz, JA, Vajjhala, SP, Safirova, E, 2008, *Growing complexities: A cross-sector review of us biofuels policies and their interactions*, Washington, DC: Resources for the Future
Bobrow, D, 2006, Policy design: Ubiquitous, necessary and difficult, in BG Peters, J Pierre (eds) *Handbook of public policy*, pp 75–96, London: SAGE
Bobrow, DB, Dryzek, JS, 1987, *Policy analysis by design*, Pittsburgh, PA: University of Pittsburgh Press
Bode, I, 2006, Disorganized welfare mixes: Voluntary agencies and new governance regimes in Western Europe, *Journal of European Social Policy* 16, 4, 346–59
Boonekamp, PGM, 2006, Actual interaction effects between policy measures for energy efficiency: A qualitative matrix method and quantitative simulation results for households, *Energy* 31, 14, 2848–73
Braathen, NA, 2007a, Instrument mixes for environmental policy: How many stones should be used to kill a bird?, *International Review of Environmental and Resource Economics* 1, 2, 185–235
Braathen, NA, 2007b, *Instrument mixes addressing non-point sources of water pollution*, Paris: OECD
Braathen, NA, Croci, E, 2005, Environmental agreements used in combination with other policy instruments, in *The Handbook of Environmental Voluntary Agreements* 43, 335–64, Dordrecht: Springer
Bressers, H, Honigh, M, 1986, A comparative approach to the explanation of policy effects, *International Social Science Journal*, 108, 267–88
Bressers, H, Klok, PJ, 1988, Fundamentals for a theory of policy instruments, *International Journal of Social Economics* 15, 3/4, 22–41
Bressers, HTA, O'Toole, LJ, 1998, The selection of policy instruments: A network-based perspective, *Journal of Public Policy* 18, 3, 213–39
Bressers, HTA, O'Toole, LJ, 2005, Instrument selection and implementation in a networked context, in P Eliadis, M Hill, M Howlett (eds) *Designing government: From instruments to governance*, pp 132–53, Montreal: McGill-Queen's University Press
Briassoulis, H (ed), 2005, *Policy integration for complex environmental problems: The example of Mediterranean desertification*, Aldershot: Ashgate
Buckman, G, Diesendorf, M, 2010, Design limitations in Australian renewable electricity policies, *Energy Policy* 38, 7, 3365–76
Capano, G, 2011, Government continues to do its job: A comparative study of governance shifts in the higher education sector, *Public Administration* 89, 4, 1622–42
Christensen, T, Laegreid, P, Wise, LR, 2002, Transforming administrative policy, *Public Administration* 80, 1, 153–79
Clemens, ES, Cook, JM, 1999, Politics and institutionalism: Explaining durability and change, *Annual Review of Sociology 25*, 441–66
Cohen, MD, March, JG, Olsen, JP, 1979, People, problems, solutions and the ambiguity of relevance, in MD Cohen, JG March, JP Olsen (eds), *Ambiguity and Choice in Organizations*, pp 24–37, Bergen: Universitetsforlaget
Cohn, D, 2004, The best of intentions, potentially harmful policies: A comparative study of scholarly complexity and failure, *Journal of Comparative Policy Analysis* 6, 1, 39–56
Colebatch, HK, 1998, *Policy*, Minneapolis, MN: University Of Minnesota Press

Considine, M, 2012, Thinking outside the box? Applying design theory to public policy, *Politics and Policy* 40, 4, 704–24

Craft, J, Howlett, M, 2012, Policy formulation, governance shifts and policy influence: Location and content in policy advisory systems, *Journal of Public Policy* 32, 2, 79–98

Dahl, RA, Lindblom, CE, 1953, *Politics, economics and welfare: Planning and politico-economic systems resolved into basic social processes*, New York: Harper and Row

Davies, P, 2004, *Is evidence-based government possible?*, www.sfi.dk/graphics/campbell/dokumenter/artikler/is_evidence-based_government_possible.pdf

De Bruijn, H, ten Heuvelhof, E, 1997, Instruments for network management, in WJM Kickert, EH Klijn, JFM Koppenjan (eds) *Managing complex networks: Strategies for the public sector*, chapter 7, London: SAGE

deLeon, P, 1988, The contextual burdens of policy design, *Policy Studies Journal* 17, 2, 297–309

del Río, P, 2009, Interactions between climate and energy policies: The case of Spain, *Climate Policy* 9, 2, 119–38

del Río, P, 2010, Analysing the interactions between renewable energy promotion and energy efficiency support schemes: The impact of different instruments and design elements, *Energy Policy* 38, 9, 4978–89, doi:10.1016/j.enpol.2010.04.003

del Río, P, Howlett, MP, 2013, Beyond the 'Tinbergen rule' in policy design: Matching tools and goals in policy portfolios, *SSRN Scholarly Paper*, Rochester, NY: Social Science Research Network, http://papers.ssrn.com/abstract=2247238

del Río, P, Carrillo-Hermosilla, J, Könnölä, T, 2010, Policy strategies to promote eco-innovation, *Journal of Industrial Ecology*, doi:10.1111/j.1530-9290.2010.00259.x.

del Río, P, Calvo Silvosa, A, Gómez, GI, 2011, Policies and design elements for the repowering of wind farms: A qualitative analysis of different options, *Energy Policy* 39, 4, 1897–908

Donovan, MC, 2001, *Taking aim: Target populations and the wars on AIDS and drugs*, Washington, DC: Georgetown University Press

Doremus, H, 2003, A policy portfolio approach to biodiversity protection on private lands, *Environmental Science and Policy* 6, 217–32

Dror, Y, 1964, Muddling through: 'Science' or inertia, *Public Administration Review*, 24, 3, 154–7

Dryzek, J, 1983, Don't toss coins in garbage cans: A prologue to policy design, *Journal Of Public Policy*, 3, 4, 345–67

Dryzek, JS, Ripley, B, 1988, The ambitions of policy design, *Policy Studies Review* 7, 4, 705–19

Dunlop, CA, 2009, The temporal dimension of knowledge and the limits of policy appraisal: Biofuels policy in the UK, *Policy Sciences* 43, 4, 343–63, doi:10.1007/s11077-009-9101-7

Eijlander, P, 2005, Possibilities and constraints in the use of self-regulation and co-regulation in legislative policy. Experiences in the Netherlands: Lessons to be learned for the EU, *Electronic Journal of Comparative Law* 9, 1, 1–8

Eliadis, FP, Hill, MM, Howlett, M (eds), 2005, *Designing government: from instruments to governance*, Montreal, McGill Queens University Press

Feindt, PH, 2012, The politics of biopatents in food and agriculture, 1950–2010: Value conflict, competing paradigms and contested institutionalisation in multi-level governance, *Policy and Society* 31, 4, 281–93

Franchino, F, Hoyland, B, 2009, Legislative involvement in parliamentary systems: Opportunities, conflict and institutional constraints, *American Political Science Review* 103, 4, 607–21

Gero, JS, 1990, Design prototypes: A knowledge representation schema for design, *Text SerialJournal*, http://text-serial.livejournal.com

Givoni, M, Macmillen, J, Banister, D, Feitelson, E, 2013, From policy measures to policy packages, *Transport Reviews*, 1–20

Goggin, ML, Bowman, AOM, Lester, JP, O'Toole, LJ, 1990, *Implementation theory and practice: Toward a third generation*, Glenview: Scott, Foresman/Little, Brown

Goldmann, K, 2005, Appropriateness and consequences: The logic of neo-institutionalism, *Governance* 18, 1, 35–52

Grabosky, PN, 1994, Green markets: Environmental regulation by the private sector, *Law and Policy* 16, 4, 419–48

Grant, W, 2010, Policy instruments in the common agricultural policy, *West European Politics* 33, 1, 22–38

Gunningham, ND, Sinclair, D, 1999, Regulatory pluralism: Designing policy mixes for environmental protection, *Law Policy* 21, 1, 49–76

Gunningham, N, Grabosky, P, Sinclair, D, 1998, *Smart regulation: Designing environmental policy*, Oxford: Clarendon Press

Haasnoot, M, Kwakkel, JH, Walker, WE, ter Maat, J, 2013, Dynamic adaptive policy pathways: A method for crafting robust decisions for a deeply uncertain world, *Global Environmental Change*, doi:10.1016/j.gloenvcha.2012.12.006

Hacker, JS, 2005, Policy drift: The hidden politics of US welfare state retrenchment, in W Streek, K Thelen (eds) *Beyond continuity: Institutional change in advanced political economies*, Oxford: Oxford University Press, pp 40–82

Hamelin, F, 2010, Renewal of public policy via instrumental innovation: Implementing automated speed enforcement in France, *Governance* 23, 3, 509–30

Hay, C, Smith, NJ-A, 2010, How policy-makers (really) understand globalization: The internal architecture of anglophone globalization discourse in Europe, *Public Administration* 88, 4, 903–27

Hickle, GT, 2013, Moving beyond the 'patchwork': A review of strategies to promote consistency for extended producer responsibility policy in the US, *Journal of Cleaner Production*, doi:10.1016/j.jclepro.2013.08.013

Hillier, B, Leaman, A, 1974, How is design possible: A sketch for a theory, *DMG–DRS Journal: Design Research and Methods* 8, 1, 40–50

Hillier, B, Musgrave, J, O'Sullivan, P, 1972, Knowledge and design, in WJ Mitchell (ed) *Environmental design: Research and practice*, 29.3.1–29.3.14, Los Angeles, CA: University of California-Los Angeles

Hippes, G, 1988, New instruments for environmental policy: A perspective, *International Journal of Social Economics* 15, 3/4, 42–51

Hoffmann, MJ, 2011, Climate governance at the crossroads: Experimenting with a global response after Kyoto, Oxford: Oxford University Press

Hood, C, 1986, *The tools of government*, Chatham: Chatham House Publishers

Hood, C, 2007, Intellectual obsolescence and intellectual makeovers: Reflections on the tools of government after two decades, *Governance* 20, 1, 127–44

Hood, C, 2010, *The blame game: Spin, bureaucracy, and self-preservation in government*, Princeton, NJ: Princeton University Press

Hood, C, Margetts, HZ, 2007, *The tools of government in the digital age*, Basingstoke: Palgrave Macmillan

Hou, Y, Brewer, G, 2010, Substitution and supplementation between co- functional policy instruments: Evidence from state budget stabilization practices, *Public Administration Review* 70, 6, 914–24

Howlett, M, 1991, Policy instruments, policy styles and policy implementation, *Policy Studies Journal* 19, 2, 1–21

Howlett, M, 2000, Managing the 'hollow state': Procedural policy instruments and modern governance, *Canadian Public Administration* 43, 4, 412–31

Howlett, M, 2004, Beyond good and evil in policy implementation: Instrument mixes, implementation styles and second generation theories of policy instrument choice, *Policy and Society* 23, 2, 1–17

Howlett, M, 2009, Policy analytical capacity and evidence-based policy-making: lessons from Canada, *Canadian Public Administration* 52, 2, 153–75

Howlett, M, 2011, *Designing public policies: Principles and instruments*, New York: Routledge

Howlett, M, 2012, The Lessons of Failure: Learning and Blame Avoidance in Public Policy-making, *International Political Science Review* 33, 5, 539–55, doi:10.1177/0192512112453603

Howlett, M, 2014a, Policy design: What, who, how and why?, in C Halpern, P Lascoumes, P Le Gales (eds) *L'instrumentation et Ses Effets*, Paris: Presses de Sciences Po

Howlett, M, 2014b, From the 'old' to the 'new' policy design: Beyond globalization and collaborative governance, *Policy Sciences*, Special issue on Policy Design, forthcoming

Howlett, M, del Río, P, 2014, The parameters of policy portfolios: Verticality and horizontality in design spaces and their consequences for policy mix formulation, Environment and Planning C, forthcoming

Howlett, M, Lejano, R, 2013, Tales from the crypt: The Rise and fall (and re-birth?) of policy design studies, *Administration and Society* 45, 3, 356–80

Howlett, M, Ramesh, M, 1993, Patterns of policy instrument choice: Policy styles, policy learning and the privatization experience, *Policy Studies Review*, 12, 1, 3–24

Howlett, M, Rayner, J, 1995, Do ideas matter? Policy subsystem configurations and the continuing conflict over Canadian forest policy, *Canadian Public Administration* 38, 3, 382–410

Howlett, M, Rayner, J, 2007, Design principles for policy mixes: Cohesion and coherence in 'new governance arrangements', *Policy and Society* 26, 4, 1–18

Howlett, M, Rayner, J, 2013, Patching vs packaging in policy formulation: Assessing policy portfolio design, *Politics and Governance* 1, 2, 170–82

Ingram, H, Schneider, A, 1990, Improving implementation through framing smarter statutes, *Journal of Public Policy* 10, 1, 67–88

Jarvis, DSL, 2011, *Infrastructure regulation what works, why and how do we know?: Lessons from Asia and beyond*, Singapore: World Scientific

Jordan, A, Benson, D, Wurzel, R, Zito, A, 2011, Policy instruments in practice, in JS Dryzek, RB Norgaard, D Schlosberg (eds) *Oxford Handbook of Climate Change and Society*, pp 536–49, Oxford: Oxford University Press

Jordan, A, Benson, D, Zito, A, Wurzel, R, 2012, Environmental policy: Governing by multiple policy instruments?, in JJ Richardson (ed) *Constructing a policy state? Policy dynamics in the EU*, Oxford: Oxford University Press

Jordan, A, Wurzel, R, Zito, A, 2013, Still the century of 'new' environmental Policy instruments? Exploring patterns of innovation and continuity, *Environmental Politics* 22, 1, 155–73

Junginger, S, 2012, Design and innovation in the public sector: Matters of design in policy-making and policy implementation, European Academy of Design Conference

Kay, A, 2007, Tense layering and synthetic policy paradigms: The politics of health insurance in Australia, *Australian Journal of Political Science* 42, 4, 579–91

Keyes, JM, 1996, Power tools: The form and function of legal instruments for government action, *Canadian Journal of Administrative Law and Practice* 10, 133–74

Kingdon, JW, 1984, *Agendas, alternatives, and public policies*, Boston: Little, Brown and Company

Kirschen, ES, Benard, J, Besters, H, Blackaby, F, Eckstein, O, Faaland, J, Hartog, F, Morissens, L, Tosco, E, 1964, *Economic policy in our time*, Chicago: Rand McNally

Kiss, B, Manchón, CG, Neij, L, 2012, The role of policy instruments in supporting the development of mineral wool insulation in Germany, Sweden and the United Kingdom, *Journal of Cleaner Production*, doi:10.1016/j.jclepro.2012.12.016

Kiviniemi, M, 1986, Public policies and their targets: A typology of the concept of implementation, *International Social Science Journal* 38, 108, 251–66

Koch, P, 2013, Overestimating the shift from government to governance: Evidence from Swiss metropolitan areas, *Governance* 26, 3, 397–423

Kooiman, J, 2000, Societal governance: Levels, models, and orders of social-political interaction, in J Pierre (ed) *Debating governance*, pp 138–66, Oxford: Oxford University Press

Landry, R, Varone, F, Goggin, ML, 1998, The determinants of policy design: The state of the theoretical literature, paper presented to the *Midwest Political Science Association*, Chicago, IL

Lascoumes, P, Le Gales, P, 2007, Introduction: Understanding public policy through its instruments – from the nature of instruments to the sociology of public policy instrumentation, *Governance* 20, 1, 1–21

Lasswell, H, 1954, Key symbols, signs and icons, in L Bryson, L Finkelstein, R M. MacIver, R McKean (eds), *Symbols and values: An initial study*, pp 77–94, New York: Harper and Bros

Lasswell, H, 1958, *Politics: Who gets what, when, how*, New York: Meridian

Lasswell, HD, Lerner, D, 1951, The policy orientation, in Lerner, D, Lasswell, HD (eds), *The policy sciences: Recent developments in scope and method*, pp 3–15, Stanford: Stanford University Press

Lecuyer, O, Bibas, R, 2012, Combining climate and energy policies: Synergies or antagonism? Modeling interactions with energy efficiency instruments, *SSRN Scholarly Paper*, Rochester, NY: Social Science Research Network, 26 January, http://papers.ssrn.com/abstract=1992324

Lecuyer, O, Quirion, P, 2013, Can uncertainty justify overlapping policy instruments to mitigate emissions?, *Ecological Economics* 93, September, 177–91, doi:10.1016/j.ecolecon.2013.05.009

Lejano, RP, Shankar, S, 2013, The contextualist turn and schematics of institutional fit: Theory and a case study from southern India, *Policy Sciences* 46, 1, 83–102

Lindblom, CE, 1959, The science of muddling through, *Public Administration Review* 19, 2, 79–88

Linder, SH, Peters, BG, 1984, From social theory to policy design, *Journal of Public Policy* 4, 3, 237–59

Linder, SH, Peters, BG, 1988, The analysis of design or the design of analysis?, *Policy Studies Review* 7, 4, 738–50

Linder, SH, Peters, BG, 1990a, Policy formulation and the challenge of conscious design, *Evaluation and Program Planning* 13, 303–11

Linder, SH, Peters, BG, 1990b, Research perspectives on the design of public policy: Implementation, formulation, and design, in DJ Palumbo, DJ Calisto (eds) *Implementation and the policy process: Opening up the black box*, pp 51–66, New York: Greenwood Press

Linder, SH, Peters, BG, 1990c, The design of instruments for public policy, in SS Nagel (ed) *Policy theory and policy evaluation: Concepts, knowledge, causes, norms*, pp 103–19, New York: Greenwood Press

Linder, SH, Peters, BG, 1990d, An institutional approach to the theory of policy-making: The role of guidance mechanisms in policy formulation, *Journal of Theoretical Politics* 2, 1, 59–83

Linder, SH, Peters, BG, 1991, The logic of public policy design: Linking policy actors and plausible instruments, *Knowledge, Technology and Policy* 4, 1, 125–51

Locke, W, 2009, Reconnecting the research–policy–practice nexus in higher education: 'Evidence-based policy' in practice in national and international contexts, *Higher Education Policy* 22, 119–40

Lowi, TJ, 1966, Distribution, regulation, redistribution: The functions of government, in RB Ripley (ed), *Public policies and their politics: Techniques of government control*, pp 27–40, New York: WW Norton

Lowi, TJ, 1972, Four systems of policy, politics and choice, *Public Administration Review* 32, 4, 298–310

Lowi, TJ, 1985, The state in politics: The relation between policy and administration, in RG Noll (ed), *Regulatory policy and the social sciences*, pp 67–105, Berkeley, CA: University of California Press

Macramé, D, Whittington, D, 1997, *Expert advice for policy choice: Analysis and discourse*, Washington, DC: Georgetown University Press

Majone, G, 1975, On the notion of political feasibility, *European Journal of Political Research* 3, 2, 259–74

Majone, G, 1976, Choice among policy instruments for pollution control, *Policy Analysis* 2, 4, 589–613

March, JG, Olsen, JP, 2004, *The logic of appropriateness*, in M Rein, M Moran, RE Goodin (eds) *Handbook of public policy*, Oxford: Oxford University Press

May, P, 2003 Policy design and implementation, in BG Peters, J Pierre (eds) *Handbook of public administration*, pp 223–33, Beverly Hills, CA: SAGE Publications

Mayntz, R, 1983 , The conditions of effective public policy: A new challenge for policy analysis, *Policy & Politics* 11, 2, 123–43

Mayntz, R, 1979, Public bureaucracies and policy implementation, *International Social Science Journal* 31, 4, 633–45

Meuleman, L, 2009a, Metagoverning governance styles: Increasing the public manager's toolbox, Paper presented at the ECPR general conference, Potsdam

Meuleman, L, 2009b, The cultural dimension of metagovernance: Why governance doctrines may fail, *Public Organization Review* 10, 1, 49–70

Mintrom, M, 2007, The policy analysis movement, in L Dobuzinskis, M Howlett, D Laycock (eds) *Policy analysis in Canada: The state of the art*, pp 71–84, Toronto: University of Toronto Press

Mondou, M, Montpetit, E, 2010, Policy styles and degenerative politics: Poverty policy designs in Newfoundland and Quebec, *Policy Studies Journal* 38, 4, 703–22, doi:10.1111/j.1541-0072.2010.00380.x

Montpetit, E, 2003, *Misplaced distrust: Policy networks and the environment in France, the United States, and Canada*, Vancouver: UBC Press

Moseley, A, Tierney, S, 2004, Evidence-based practice in the real world, *Evidence and Policy* 1, 1, 113–19

O'Toole, LJ, 2000, Research on policy implementation: Assessment and prospects, *Journal of Public Administration Research and Theory* 10, 2, 263–88

Oikonomou, V, Jepma, CJ, 2007, A framework on interactions of climate and energy policy instruments, *Mitigation and Adaptation Strategies for Global Change* 13, 2, 131–56

Oikonomou, V, Flamos, A, Grafakos, S, 2010, Is blending of energy and climate policy instruments always desirable?, *Energy Policy* 38, 8, 4186–95

Oikonomou, V, Flamos, A, Zeugolis, D, Grafakos, S, 2011, A qualitative assessment of eu energy policy interactions, *Energy Sources, Part B: Economics, Planning, and Policy* 7, 2, 177–87

Oliphant, S, Howlett, M, 2010, Assessing policy analytical capacity: Comparative insights from a study of the Canadian environmental policy advice system, *Journal of Comparative Policy Analysis: Research and Practice* 12, 4, 439

Orren, K, Skowronek, S, 1998, Regimes and regime building in American government: A review of literature on the 1940s, *Political Science Quarterly* 113, 4, 689–702

Parsons, W, 1995, *Public policy: An introduction to the theory and practice of policy analysis*, Aldershot, Cheltenham: Edward Elgar

Parsons, W, 2001, Modernising policy-making for the twenty-first century: The professional model, *Public Policy and Administration* 16, 3, 93–110

Peters, BG, Pierre, J, 1998, Governance without government? Rethinking public administration, *Journal of Public Administration Research and Theory* 8, 2, 223–44

Peters, BG, 2005, Conclusion: The future of instruments research, in P Eliadis, M Hill, M Howlett (eds), Designing government: From instruments to governance, pp 353–63, Montreal: McGill-Queen's University Press

Radaelli, CM, Dunlop, CA, 2013, Learning in the European Union: Theoretical lenses and meta-theory, *Journal of European Public Policy* 20, 6, 923–40, doi:10.1080/13501763.2013.781832

Ramesh, M, Fritzen, S (eds) 2009, *Transforming Asian governance: Rethinking assumptions, challenging practices*, New York: Routledge

Ramesh, M, Howlett, M (eds) 2006, *Deregulation and its discontents: Rewriting the rules in Asia*, Aldershot: Edward Elgar

Rayner, J, 2013, On smart layering as policy design: Tackling the biofuels policy mess in Canada and the United Kingdom, *Policy Sciences*, Special issue on Policy Design, forthcoming

Rayner, J, Howlett, M, Wilson, J, Cashore, B, Hoberg, G, 2001, Privileging the sub-sector: Critical sub-sectors and sectoral relationships in forest policy-making, *Forest Policy and Economics* 2, 3, 319–32

Rhodes, RAW, 1996, The new governance: Governing without government, *Political Studies* 44, 652–67

Roch, C, Pitts, D, Navarro, I, 2010, Representative bureaucracy and policy tools: Ethnicity, student discipline, and representation in public schools, *Administration and Society* 42, 1, 38–65

Sager, F, Rielle, Y, 2013, Sorting through the garbage can: Under what conditions do governments adopt policy programs?, *Policy Sciences* 46, 1, 1–21, doi:10.1007/s11077-012-9165-7

Salamon, L, 1981, Rethinking public management: Third party government and the changing forms of government action, *Public Policy* 29, 3, 255–75

Salamon, LM, 1989, The tools approach: Basic analytics, in LS Salamon, MS Lund (eds) *Beyond privatization: The tools of government action*, pp 23–50, Washington, DC: Urban Institute

Salamon, LM, 2002a, The new governance and the tools of public action, in LM Salamon (ed) *The tools of government: A guide to the new governance*, pp 1–47, New York: Oxford University Press

Salamon, LM, 2002b, *The tools of government: A guide to the new governance*, New York: Oxford University Press

Schneider, AL, Ingram, H, 1990a, Policy design: Elements, premises and strategies, in SS Nagel (ed) *Policy theory and policy evaluation: Concepts, knowledge, causes and norms*, pp 77–102, New York: Greenwood

Schneider, AL, Ingram, H, 1990b, Behavioural assumptions of policy tools, *Journal of Politics* 52, 2, 511–29

Schneider, A, Ingram, H, 1994, Social constructions and policy design: Implications for public administration, *Research in Public Administration* 3, 137–73

Schneider, AL, Ingram, H, 1997, *Policy design for democracy*, Lawrence, KS: University Press of Kansas

Schön, DA, 1988, Designing: Rules, types and words. *Design Studies* 9, 3, 181–90

Schön, DA, 1992, Designing as reflective conversation with the materials of a design situation, *Knowledge-Based Systems* 5, 1, 3–14

Sidney, MS, 2007, Policy formulation: design and tools, in F Fischer, GJ Miller, MS Sidney (eds) *Handbook of public policy analysis: Theory, politics and methods*, pp 79–87, New Brunswick, NJ: CRC, Taylor and Francis

Skodvin, T, Gullberg, AT, Aakre, S, 2010, Target-group influence and political feasibility: The case of climate policy design in Europe, *Journal of European Public Policy* 17, 6, 854, doi:10.1080/13501763.2010.486991

Stavins, RN, 1996, Correlated uncertainty and policy instrument choice, *Journal of Environmental Economics and Management* 30, 2, 218–32, doi:10.1006/jeem.1996.0015

Sterner, T, 2003, *Policy instruments for environmental and natural resource management*, Washington, DC: Resource for the Future Press

Stokey, E, Zeckhauser, R, 1978, *A primer for policy analysis*, New York: Norton

Stone, DA, 1988, *Policy paradox and political reason*, Glenview, IL.: Scott, Foresman

Swanson, D, Barg, S, Tyler, S, Venema, H, Tomar, S, Bhadwal, S, Nair, S, Roy, D, Drexhage, J, 2010, Seven tools for creating adaptive policies, *Technological Forecasting and Social Change* 77, 6, 924–39

Taeihagh, A, Bañares-Alcántara, R, Givoni, M, 2013, A virtual environment for the formulation of policy packages, *Transportation Research Part A: Policy and Practice*, doi:10.1016/j.tra.2013.10.017

Thelen, Kathleen, 2004, *How institutions evolve: The political economy of skills in Germany, Britain, the United States and Japan*, Cambridge: Cambridge University Press

Thelen, K, Mahoney, J, Rueschemeyer, D, 2003, How institutions evolve: Insights from comparative historical analysis, in J Mahoney, D Rueschemeyer (eds), *Comparative Historical Analysis in the Social Sciences*, pp 208–40, Cambridge: Cambridge University Press

Timmermans, A, Rothmayr, C, Serduelt, U, Varone, F, 1998, The design of policy instruments: Perspectives and concepts, paper presented to the *Midwest Political Science Association*, Chicago, IL

Tinbergen, J, 1952, *On the theory of economic policy*, Amsterdam: North-Holland

Tollefson, C, Zito, AR, Gale, F, 2012, Symposium overview: Conceptualizing new governance arrangements, *Public Administration* 90, 1, 3–18

Torenvlied, R, Akkerman, A, 2004, Theory of 'soft' policy implementation in multilevel systems with an application to social partnership in the Netherlands, *Acta Politica* 39, 31–58

Torgerson, D, 1985, Contextual orientation in policy analysis: The contribution of Harold D Lasswell, *Policy Sciences* 18, 240–52

Torgerson, D, 1990, Origins of the policy orientation: The aesthetic dimension in Lasswells political vision, *History of Political Thought* 11, Summer, 340–4

Trebilcock, M, Hartle, DG, 1982, The choice of governing instrument, *International Review of Law and Economics* 2, 29–46

Trebilcock, MJ, Prichard, JRS, 1983, Crown corporations: The calculus of instrument choice, in JRS Prichard (ed) *Crown corporations in Canada: The calculus of instrument choice*, pp 1–50, Toronto: Butterworths

Tribe, LH, 1972, Policy science: Analysis or ideology?, *Philosophy and Public Affairs* 2, 1, 66–110

Tupper, A, Doern, GB, 1981, Public corporations and public policy in Canada, in A Tupper, GB Doern (eds) *Public corporations and public policy in Canada*, pp 1–50, Montreal: Institute for Research on Public Policy

Van der Heijden, J, 2011, Institutional layering: A review of the use of the concept, *Politics* 31, 1, 9–18

Vedung, E, Bemelmans-Videc, ML, Rist, RC, 1997, Policy instruments: Typologies and theories, in E Vedung, ML Bemelmans-Videc, RC Rist (eds) *Carrots, sticks and sermons: Policy instruments and their evaluation*, pp 21–58, New Brunswick, NJ: Transaction Publishers

Walker, WE, Marchau, VAWJ, Swanson, D, 2010, Addressing deep uncertainty using adaptive policies: Introduction to section 2, *Technological Forecasting and Social Change* 77, 6, 917–23

Weaver, K, 2009, *Target compliance: The final frontier of policy implementation*, Washington, DC: Brookings Institution, www.brookings.edu/research/papers/2009/09/30-compliance-weaver

Weaver, K, 2010, *But will it work?: Implementation analysis to improve government performance*, Washington, DC: Brookings Institution, www.brookings.edu/research/papers/2010/02/implementation-analysis-weaver

Wildavsky, AB, 1979, *Speaking truth to power: The art and craft of policy analysis*, Boston, MA: Little-Brown

Williams, RA, 2012, The limits of policy analytical capacity: Canadian financial regulatory reform, *International Journal of Public Sector Management* 25, 6/7, 455–63

Wintjes, R, 2007, *Monitoring and analysis of policies and public financing instruments conducive to higher levels of R&D investments: The 'policy mix' project. Case study: The Netherlands*. Maastricht: UNU-MERIT

Woodside, K, 1986, Policy instruments and the study of public policy, *Canadian Journal of Political Science* 19, 4, 775–93

Yi, H, Feiock, R C, 2012, Policy tool interactions and the adoption of state renewable portfolio standards, *Review of Policy Research* 29, 2, 193–206