

Heuristics for practitioners of policy design: Rules-of-thumb for structuring unstructured problems

Robert Hoppe

University of Twente, The Netherlands

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Abstract

This article is an attempt to bridge the divide between academics and practitioners. Informed by both design theory and the reality of policy work, its focus is on ‘problems’. From a practitioners’ perspective, policy design is both an intellectual and political process, an inevitable oscillation between ‘puzzling’ and ‘powering’, in which ‘messy’ or unstructured problems are re-structured from problems as webs of ‘undesirable situations’ to problems as specific, time-and-space bound ‘opportunities for improvement’. This requires a questioning habitus in practitioners of policy design. Using a socio-cognitive theory of problem processing, this paper shows how policy design is an iterative process of problem sensing, problem categorization, problem decomposition and problem definition. For each of these stages, appropriate rules-of-thumb for questioning and answering can be suggested that induce thought habits and styles for responsive and solid policy designs.

Keywords

Policy design, politics of design, practitioners, problem governance theory, problem structuring, unstructured problems

“... the situation is such that the problem itself is problematic. ...the researcher is not only in the business of finding or sorting among Answers. He is inevitably involved also in finding or sorting among Questions.” (Rein and White, 1977: 262–263, quoted in Turnbull, 2006: 6)

Corresponding author:

Robert Hoppe, Universiteit Twente, Faculteit Gedrags-Management-en Maatschappijwetenschappen, Spölminkkamp 18, Enschede 7500 AE, The Netherlands.
Email: r.hoppe@utwente.nl

Introduction: Substituting problem-oriented for government-centered policy design

For many of us policy making is still the prerogative of a political élite; and policy analysis and design are decision support for leaders (Radin, 2013). One implication is that policies are perceived as legacies of previous authoritative decisions. Hence, to an increasing number of citizens, policies are yesterday's answers to today's problems; and not innovative designs that influence their future, and help to better tackle their day-to-day problems.

This is exacerbated by seemingly unavoidable tendencies among policy advisors working for government. In judging the relevance of information, their first criterion is: can it harm my minister, or is it risky for the government in power? (tHart et al., 2002: 157ff; Webber, 1992). Policy-relevant information is framed by self-protective political reflexes. Politicians, preoccupied with polls, do look to citizen behaviour stylized in statistics; but their perspective is dominated by party-political, cabinet or bureau-political interests and considerations of gaining or maintaining popular support and political power (Hajer, 2009).

Another tendency is a strong role for economic policy analysis to ensure austerity and social benefits outweigh social costs (West, 1988). Therefore, policy analysts look at welfare theory, institutional economics and public finance theories; and apply them by using the toolkit of modelling, cost-benefit and cost-effectiveness analysis, and related calculative heuristics. True, they look outside the windows of government departments, but what they see is forged in the Procrustean-bed of their professional frames. Policy design becomes an academic, depoliticized exercise in 'rational choice', ticking off checklists of standard solutions for problems of government and market failures (Weimer and Vining, 1999), or using some other standardized set of policy formulation tools (Jordan and Turnpenny, 2015). Yet another tendency in a neoliberal age that delegitimizes government is a concern with the legitimacy, scope and capacity of the government as institution. Policy advisors, preoccupied with government itself, see policy analysis and design as the professional skill in choosing the right institutional mode(s) of governance and a fitting instrument mix from a toolkit of available (or to be upgraded) skills and resources (Howlett, 2011; Howlett et al., 2015).

All these tendencies are rather self-referential (Snellen, 2002). They function as constraints in governmental problem solving, not as a shift in emphasis from government-centered problem solving to problem finding and interactive, more deliberative policymaking in an age of governance where policymaking only works as coproduction or 'making sense together' between governments, citizens and nongovernmental actors (Hoppe, 1999).

In contrast to these government-centered modes, here I focus on an outward-looking, problem-oriented form of policy design. It is based on an *epistemology of questioning* (Turnbull, 2006, 2013), and it highlights not problem solving, but problem finding and structuring as major tasks. *What is problem-oriented and problem structuring policy design like?* What is the policy designer's task? Using an

empirically grounded view of policy design practices (Colebatch et al., 2010; Hoppe et al., 1995), this paper will show how problem finding starts with interpreting inchoate expressions of collective unease and results in the political choice of a better – not necessarily fully – structured problem. This new problem structure should offer the credible promise of real improvement of a problematic situation for a majority of direct stakeholders and others who are indirectly affected by the policy.

So, this article is an attempt, firstly, to rethink some (but not all) known problems of policy design from three rather uncommon starting points and, secondly, to synthesize the results in rules-of-thumb resonating with practitioners. More specifically, it purports to fill a few gaps in the literature. First, there has been precious little empirical research into policy design and policy formulation processes in their entirety; starting from their initiation by some authoritative decision maker's instructions or terms of reference, up until their adoption by, for example, a parliament. Although there is some empirical work focussing on particular policy-analytic techniques or methods (e.g. Dunlop et al., 2012; Shapiro, 2016; Jordan and Turnpenny, 2015), I take up the problematic of policy design from a 'whole process' point of view (see also Colebatch, in press). Second, from such a process perspective, but deviating from older mainstream accounts of policy design like Bardach (2012), Weimer and Vining (1999/2010) or Patton et al. (2013), this article is a sustained reflection upon what outward-looking, problem-oriented and questioning-epistemology anchored policy design would look like. Interpretive and argumentative policy analysts have always insisted that the gist of their insights and teachings could only be expressed as a trained mindset or habitus; never in a set of rules like in mainstream policy analysis. Nevertheless, going against their grain, I hope to have captured its spirit in how-to-do-it, teachable, short guidelines that will resonate among practitioners.

The article proceeds in three sections. We start from first principles and specifies four maxims of a questioning approach to policy design: (1) problematicity, (2) frame reflectiveness, (3) alternating forward and backward mapping and (4) oscillating puzzling and powering. Following on, in the structuring unstructured problems section, we set out the overall idea of policy design as structuring unstructured problems and, then elaborate rules-of-thumb that help practitioners in their essential design tasks: problem sensing, problem exploration, problem decomposition, problem definition and the politics of timing. The article ends with a brief summary and conclusion. For practitioners, the 4 maxims and 15 more specific injunctions on how to perform the essential design tasks are condensed in rules-of-thumb.

Questioning 'policy problems' in policy design: Four epistemological maxims

Turnbull (2013), rethinking Lasswell's ideas about a problem-oriented policy science(s), has proposed a questioning theory of policy practice. At the heart of this approach is a problematological re-interpretation of the link between a question

and an answer; hence, between a problem and a solution. The key insight is that answering a question is both an explication and a repression of the question. This insight is applied to policy design practices by showing how problem sensing, categorization, decomposition and problem choice are successive explications of questions through problematizing them. Through reasoned or political suppression of aspects of the previously explicated questions, the policy designer transforms an inchoate problematic situation, a ‘mess’, into a progressively well articulated but delimited problem definition amenable to existing and novel policy practices as ‘solution’.

The maxims for policy design are thus anchored in a questioning or problematological epistemology, and they are four: a sensitivity to problematicity; a frame reflective habitus; the skill to shift between forward and backward mapping styles of policy design; and, finally, the savviness to tack between design as cognitive–analytic puzzling and political struggle for support or powering.

Problematicity

Problematicity is the key quality of all social life of human beings; to question is to be human (Hoppe, 2010/2011: 7–8; Turnbull, 2013: xi). Humans have to respond to being thrown into their life, to the ‘*condition humaine*’, which presents itself as a question. But the question–answer link presents itself as a problem. For the purpose of discovering maxims for a heuristics of policy design, the most important feature of the question–answer link is its frequent de-coupling. Whether in the informal probing of ordinary citizens or in the formal inquiry and research by experts in bureaucracy or academia, we tend to ‘autonomize’ the answers as ‘bodies of knowledge’, and in the process forget about the questions which triggered them (Turnbull, 2013).

For political theory and policy design this is crucial. All politics is grounded in accepted or imposed rules for questioning and answering. The problematological question–answer divide is aggravated by the division of labour under normal politics in a representative democracy: ruled citizens ask questions, and ruling policymakers and advisory experts select persuasive and authoritative answers. Restoring productive relations between policy design and public debate is axiomatic for any questioning epistemology of responsible policy design truly responsive to citizens’ problems – responsibility and responsiveness being two different qualities that do not easily go together (Mair, 2013). It takes a lot of sensitivity to problematicity to keep professionalized political and policy discourses connected to the authentic questions that drive public debate in citizens’ pub and kitchen-table talk.

Rule 1. Be constantly aware of the fragility of the question–answer links in everyday, political, policy and scientific discourse. Always be alert to uncover triggering, but suppressed questions.

One important lesson from remaining sensitive to problematicity in public policy issues is the insight that not all public policy problems are the same. Let us assume a simple definition of a ‘problem’ as a perceived deviation of an existing state (‘is’) from a desirable one (‘ought’). The ‘is’ is represented in the stock of available and relevant knowledge (answers) that can be used in understanding the problem; especially in moving away from the problematic situation, perhaps but not necessarily towards the more desirable situation. There can be more or less certainty on this stock of knowledge; that is, we can trust it more or less as a basis for (collective) action. The ‘ought’ is represented in the set of norms, values, principles, ideals, interests and emotions at stake in defining the problem (question). There can be more or less ambiguity in these normative issues. Crossing the certainty of knowledge and the ambivalence of valuative dimensions, one gets a fourfold typology of problem structures, as in Figure 1.

The pivotal issue in every process of policy design is how to move in a responsible way from politically uncontrollable, unstructured or less structured policy problem types towards the politically ‘tamed’ or structured ones (Hoppe, 2010/2011)?

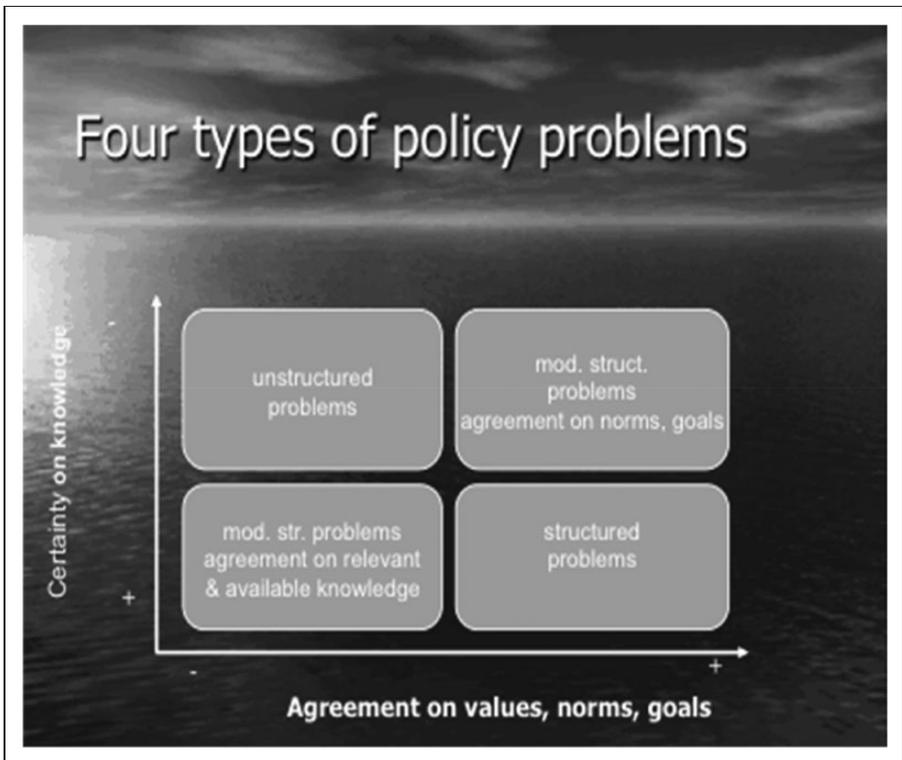


Figure 1. Four types of policy problems.

Source: Author's own.

Frame reflectiveness

In practice, sensitivity to problematicity requires a second maxim: *frame reflectiveness* (Schön and Rein, 1994). People involved in political and policy debates adumbrate divergent and competing values, worldviews and beliefs, crystallizing in a plurality of policy belief systems, attitudes and practices. What one ‘sees’, deems ‘relevant facts’, accepts as ‘evidence’, and as ‘potential solutions to a problem’ may widely differ. In questioning policy design, frame–reflectiveness means explicating the often tacit questions and assumptions that, as submerged frames, really drive debates about policy, all the way down to its details of implementation practices. Frames are the links between inchoate worries, concerns and fears that initiate a probe for a meaningful response: ‘Framing combines with questioning to shape the substantive problems which form the content of the policy process’ (Turnbull, 2006: 7). Probing to unearth frames of policy questioning should issue in an articulate formulation of a policy problem which allows a listing and choice of alternatives.

Frames allow you to select and foreground the more important properties of problematic situations, screen out or background less salient features, and yet bind the whole into a coherent pattern (Hoppe, 2010/2011: 54–55). Framing is a questioning process that highlights some questions, suppresses a lot of others and thereby steers allowable and legitimate answers. But framing in politics and policymaking can be a hidden process that is the barely noticeable effect of a dominating policy discourse. Thus, framing is also a strategic tool for exercising power as it offers ample opportunities for systematically promoting your own frame over those of others (Lakoff, 2009). Hence, both for puzzling and for powering reasons, policy designers ought to be frame reflective, i.e. be aware of and recognize the many alternative frames floating around in everyday political and policy discourse. It is a prerequisite for disrupting ingrained but outmoded, perhaps hegemonic governmental practices; it is essential as condition for creativity and opening up search activities for new combinations (Considine, 2012).

Rule 2. Know your way in the most important frames in political, policy and scientific discourses; pay special attention to frames that are outside the mainstream of hegemonic political and policy discourses.

Alternating forward and backward mapping

A pivotal task in frame–reflective policy design is the systematic confrontation between political frames of those who advocate policy innovation, and the frames of those citizen groups whose attitudes, beliefs and behaviors are in need of being changed in those advocates’ eyes (Grin and Van de Graaf, 1996). Another major task is to confront both with the organizational and professional frames of those who will have to translate new policy proposals into new governmental practices. Thus, frame–reflectiveness requires a wide survey of relevant actors’ frames in the entire policy network; a matter of constructing an interpretive

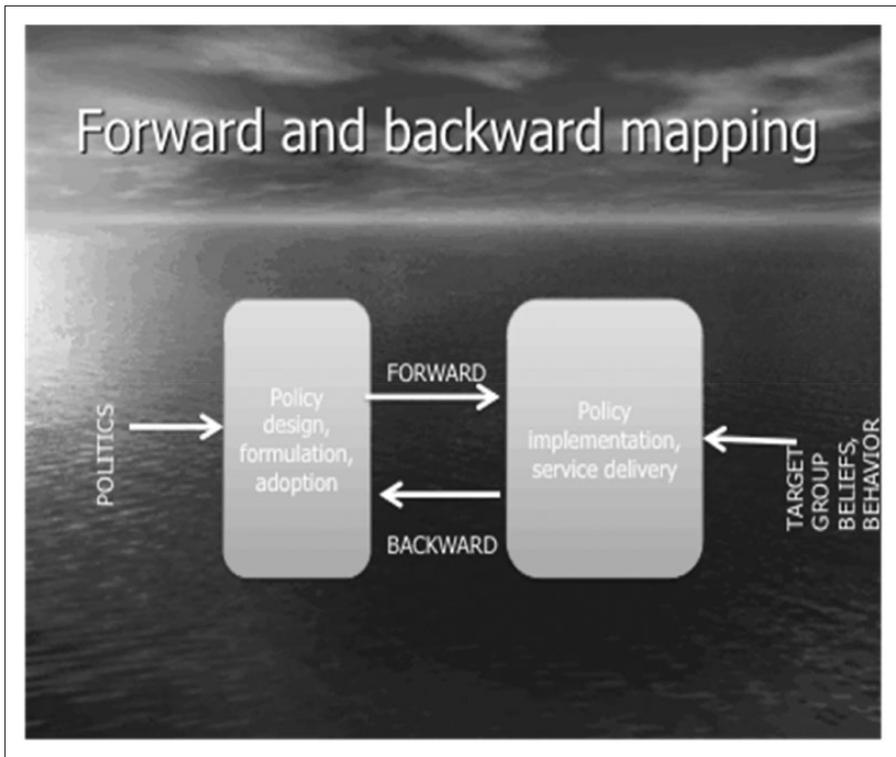


Figure 2. Forward and backward mapping.

Source: Author's own.

balance between the *forward mapping* perspectives of politicians and policy entrepreneurs, and the *backward mapping* perspectives of implementers and citizens as target groups (Elmore, 1985) (Figure 2).

Forward mapping is the thought style of policy entrepreneurs, politicians and high-level policy makers (Hoppe et al., 1998). They think in the groove of change; so innovation is inherently desirable. Party-politically desirable goals are a given. The logical next step is to operationalize them in policy objectives, programs, instruments and standard operating routines. This design logic is frequently over-optimistic about a government's capacity to impose or initiate change.

Therefore, backward mapping is equally required in truly responsive policy design. It is the inverse of forward mapping and it comes in two modes. Backward mapping *from the implementers' perspective* means taking as departure for the design exercise the standard operating routines, numbers, skills, capacities and preparedness of implementing agencies, firms or intermediary bodies in the (anticipated) implementation process. A major concern is whether or not those involved in (anticipated) implementation are capable and willing to adapt their working routines. This is where

instrument and instrument-mix and implementation theories of policy design are useful (Howlett et al., 2015). The feasibility of a politically desirable goal increases the less change in implementation practices is necessary. This clearly means that backward mapping from the implementers' perspective is as biased as forward mapping. Political desirability and creativity are being taken hostage by organizational inertia and resistance.

A second mode of backward mapping is taking the *target group's or citizens' perspective*. In this perspective, the policy designer puts himself or herself in the shoes of those social actors who will be required to change their knowledge, attitude or behaviour as a condition for achieving central policy goals. Here too, the prime concern in the design exercise is: are these people capable and willing to change their decisions and actions in the politically desired direction? Systematically addressing and answering such questions about citizens' problem frames and action theories during problem finding and policy preparation are key in backward mapping from the citizens' perspective.

Rule 3. Policy design requires familiarity with both forward and backward mapping styles of policy design, and the ability to see them as making up for each other's shortcomings.

The 'art' of 'good' problem definition is to strike a viable balance between the forward and two modes of backward mapping. 'Good' problem finding is a cognitive and political process that finds its origin in the problem *frames* of as many different but relevant, involved actors as is manageable. From these origins, gradually a problem *definition* is developed (or emerges). Design dynamics, thus, may be taken to be about problem finding (questioning) processes where forward mapping (answering) from political aspirations, and backward mapping from the implementers' and the citizens' perspectives (answering) alternate, and jointly result in a more balanced policy judgment and design (new questions and answers).

Oscillating puzzling and powering

Public policy design is embedded in a political task environment. Most researchers and authors on policy design depict 'design' as miraculously purified from political power contingencies (Howlett et al., 2015; Jordan and Turnpenny, 2015; Peters, 2015). In practice, indeed it does occur that a team of policy designers is brought together in an isolated 'virtual reality' situation, in which the 'disturbances' of power politics are temporarily backgrounded. However, such 'pure design' exercises must be taken on in the real world to become effective. This instantly diminishes their insights for practical political relevance, although high-quality boundary work (Jasanoff, 1990) sometimes helps.

The practice of policy design inevitably is a mix of fighting over and reasoning out policy (Lindblom, 1968: 12). More precisely, the relationship between the

political (powering) and the intellectual (puzzling) in policy design is a polarity – a relationship between mutually dependent, but contradictory forces that in their inextricable entanglement nevertheless should be seen and dealt with as one phenomenon/process, as a single object of analysis and unit of action (Hoppe, 2010/2011: 257). The occurrence and sequence of design routines or episodes all have their own puzzling/powering mix. Metaphorically speaking, the policy designer should have the political savviness to see why his next move on the ‘chess board’ of strategic analysis is determined by the ‘KO swing’ of a boxing opponent; or, alternately, see how the political power tactics of the head of department is informed by the superior policy-analytic strategy of his advisor. Practically, the policy designer is best advised to see puzzling/powering as a dynamic dual process, propelled by puzzling/powering oscillations just as electricity is transported in electromagnetic waves.

Rule 4. Policy design is fighting over and reasoning out policy – both, simultaneously. From a practical point of view, it is best considered an oscillating process. Policy designers should be able to stand the ‘political heat’ in the ‘design kitchen’.

Having explained and illuminated the epistemological pillars of a questioning, problem-focused approach to policy design, I now turn to more pragmatic, how-to-do-it issues. These all start from the key idea of structuring un(der)structured policy problems.

Structuring unstructured problems

The overall idea: From unstructured to structured problems

Policy problems are not objectively given properties of situations to neutral observers. They are actively constructed definitions of reality by opinionated and committed actors, to be used in a process of claims-making to persuade others to accept them. What then, in the public sector, counts for ‘good’ problem definition? If problems are social constructions, is one problem definition as good as another?

In the public sector, institutions or organizations have to survive in the political struggle over policies; and they should be able to justify their existence and public power (monopoly of violence, taxation, legislation) in terms of a general interest. In this context, there appear to be two perspectives that lend themselves to deriving properties of ‘good’ problem definition. Both follow from the overriding value of legitimacy, in all its meanings of input, process and output legitimacy.

The first perspective is the traditional top-down perspective of central policy-makers. Whether we like it or not, one relevant perspective for ‘good’ public problem definition is to ask how policy makers process public perceptions of problems so as to fit these to their institutional and organizational frames and action

repertoires. Taking this perspective, Dery (1984: 21–27) has proposed three criteria to judge ‘good’ problem definitions:

1. a problem definition should fit a feasible solution; this is why in questioning policy design one has to speak of problem-solution couplings all the time; problem definitions (as questions) and solutions (as answers) cannot be framed independently of each other;
2. a problem definition ought to be geared to some actor’s intervention perspective; i.e. a problem ought to be fit for organizational or inter-organizational action;
3. last but not least, a problem definition ought to be seen as a realistic opportunity to improve a past and current problematic situation, according to the standards or feelings of a majority of active and passive stakeholders.

The second perspective is the potential mismatch between problems-as-processed-by-official-policy makers and problems-as-experienced-by-social-actors, as citizens in civil society. In cases of a permanent mismatch, public policymakers are justly accused of solving the wrong problem. Such wrong problems are politically risky, as they may result in protracted controversies (Hisschemöller and Hoppe, 1995; Mitroff and Silvers, 2010; Schön and Rein, 1994), which may occasionally spread from one policy domain to others, thereby endangering an entire political system. The 2016 US presidential election, the UK ‘Brexit’ referendum and the rise of populism elsewhere in Europe offer good contemporary examples.

Frequently, problems-as-processed by authoritative policymakers entail path-dependent, structured problem definitions that exclude newly emerging and promising alternative solutions seriously considered by other actors. In such cases, good governance means deconstructing the structured problem, and opening up the cognitive and social parts of public policymaking to new actors and ideas. In other cases, truly new problems emerge in society, which, after a while, achieve public and political agenda status. Such problems may be truly ‘wicked’ or unstructured. Here, good governance means sincere and serious political attempts to move the unstructured problem into more structured directions, as moderately structured and structured problems lend themselves more easily to (inter-)organizational policymaking and implementation. It will become clear why the mismatch perspective ought to be prior to the central policymakers’ perspective, yet a proper balance ought to be found (Figure 3).

Rule 5. Consider each policy problem as unstructured at first; work towards one or more structured problems.

As noted above, establishing a balance between forward and backward mapping is a practical art, not a science of design. Clearly, such a balanced, prudent problem definition is not easy to achieve. It means hard work for policy designers, who are well advised to spend up to a third to half of the time allocated to analysis and design in finding and defining the ‘right’ problem.

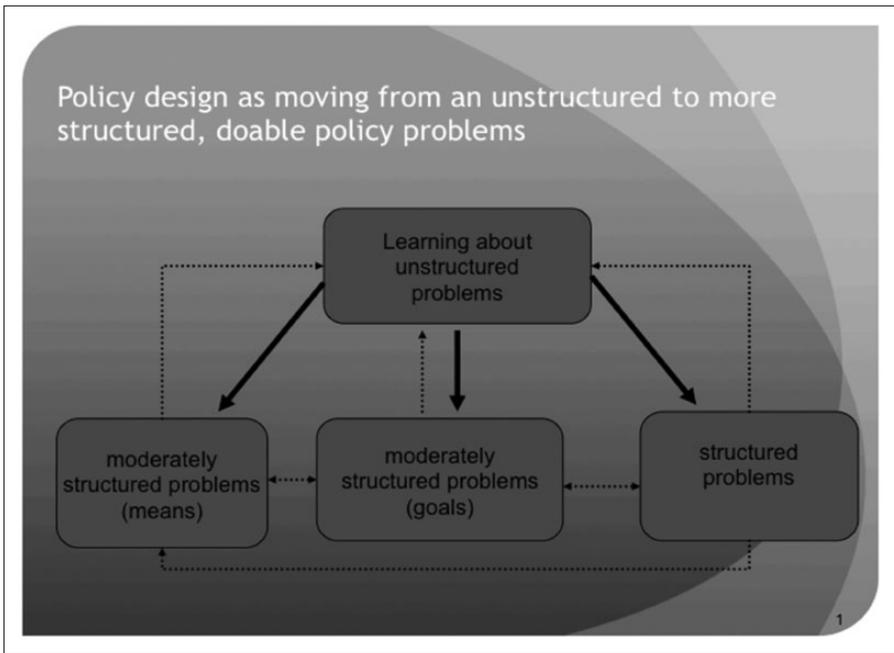


Figure 3. Policy design: from unstructured to structured problem.

Source: Author's own.

Rule 6. Rather an approximate solution to the right problem, than a fully elaborated solution to the wrong problem.

Although, in reality, it is an interdependent and intertwined system of simultaneous event streams, for didactic reasons, I will depict the process of problem finding in a four-stage sequential model: problem sensing, problem exploration, problem decomposition and political choice of a problem definition. For each stage, the image of the problem (question) is transformed in a new (set of) question(s) and appropriate questioning heuristics for responsive policy design will be suggested (cf. Considine, 2012) (Figure 4).

Rules-of-thumb for problem sensing or problem gestation

In practice, policies come about as temporary negotiated settlements of the conflicts and struggles between participants in the policymaking process (Gale, 2003; Lindblom, 1968). For many policy designers, this means that 'new' problems emerge from implementation problems, management evaluations of public agency performance, or more critical reviews of policy outputs from independent or 'higher' administrative agencies like the General Accounting Office, or external evaluation bodies. In such cases, problem perception is not an external input in the

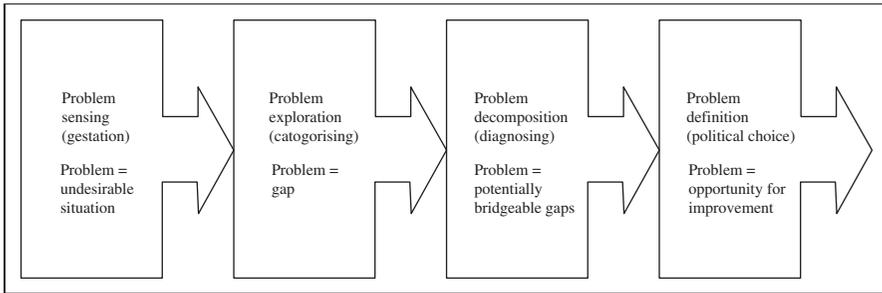


Figure 4. Simplified sequential model of a questioning-based policy design process (Source: Cowan, 1986; Hoppe, 1989).

policymaking machinery of government; it is actually withinput, concerned with self-perception and self-evaluation. In spite of the reality of numerous withinputs, responsive policy designers stay more attuned to external inputs.

Rule 7. In order not to lose contact with society, avoid and if necessary resist pre-occupation with withinputs from official sources.

Looking outside government, policy designers ‘stumble upon’ a stream of complaints and protests that indicate many people deem some developments undesirable and that ‘politics’ or ‘government’ should intervene. Of course, no government accepts such claims as a reason to abstain from making up its own mind about their acceptability, in light of its own problem perception and problem solving capacity. Moreover, there is the issue of the ‘proper’ role of the state in tackling collective ills – a question suffused with ideological claims. Also, the social and political climate simply may not yet allow a more precise description and interpretation of what is so problematic about a situation. There may be multiple, but equally plausible interpretations and analyses in good public standing. One may speak of a period of problem latency and problem gestation (Cowan, 1986: 766) from which, sooner or later, some more intellectually and/or politically dominant definitions may surface. Nevertheless, forward-looking designers should develop a keen eye and ear for serious and sustained expressions of unease and discomfort, however inchoate, under-articulated, and not-yet-well-analyzed (Yankelovich, 1991: 160).

Rule 8. The priority rule in problem sensing for responsive policy design is to know the public’s starting point.

In periods of problem sensing and gestation, the designer’s task is a double one. First, he or she will develop a descriptive map of the problematic situation; and second, he or she will have to get as much knowledge as possible about the frames of the problem owners ‘out there’. Many governments maintain quantified databases, indicator systems and statistics for issues using quantitative official data

(Hallsworth et al., 2011; Hogwood and Gunn, 1984: 78–65). Designers will judge a problem's urgency and future development from its size and scope. For newly emerging issues and problem definitions such databases at best provide a first-cut approach. But, if mistaken for a full analysis of new problems, analysis of existing data may prove to be a flawed first step. In such cases, listening to and registering narratives of stakeholders about their problem perceptions and experiences is the only feasible way to get a feel for the problem (Borins, 2011; Lejano et al., 2013). Methods and techniques for joint knowledge production may be profitably used at this stage (Edelenbos et al., 2011). Curiously enough, this is all the more necessary when the new, but inchoate problem is also a withinput, i.e. an emerging problematic situation or cluster of such situations resulting from government practices and previous policy interventions.

Rule 9. In getting a good feel for new problems, create joint knowledge by using both quantitative official data and stakeholder narratives.

What is actually needed is a method for debate and policy network auditing, a set of heuristics and methods that would enable designers to explore and keep track of the development of problems over time. Using both printed and digital sources of information, governments have actually already adopted debate tracking methods. Following and interpreting the polls on an almost daily basis nowadays is considered an integral part of the art of governing. Spinning the news by professionalized political 'marketers' is as much a routine mode of governing as a technique of winning elections. The major reason for the insufficiency of polling (and mass surveys, for that matter) as a means for problem sensing and framing is the volatility and manipulability of public opinion. Preselecting and choosing the survey questions allow political opinion makers to maximally exploit the public's tendency for compartmentalized thinking; the mostly unconscious mode of not really making up one's mind, and keeping cognitive dissonance and its mental discomfort at bay.

Organizing internet discussions and fora is a slightly better approach. But the experiences with this method remain ambivalent, and tainted by the fact that it is the policymaking organization that initiates and moderates the internet debate – even when, formally, an independent moderator performs the job (Edwards and De Kool, 2015). The same goes for frequently applied methods like focus groups and mini-publics, and other qualitative methods like network mapping which include modeling the mental maps of network actors or ordinary citizens (Fung, 2003; Hoppe, 2010).

An even better alternative might be using a multi- and inter-media or arena-model of mapping social debates on issues in such a way that government officials or policy analysts only register external signals, voices, and images. One of the best ways to achieve this uses the social problems arena model (Hilgartner and Bosk, 1998; Joly and Assouline, 2001; Renn, 1992) as an analytical technique to perform the task of mapping and tracking social debates on a particular policy issue in

multiple media. The analytical technique sets out from a six-arena model of public debate – economic, scientific, public policy, legal, religious and (social) media. Its purpose is to register and closely study trans-arena spill-overs and interactions as indicators for the intensity of debate and the political salience of the issue. In the arena-model, ‘public opinion’ is not a reified, unitary object of analysis. The media arena is not considered a pars pro toto for ‘the public opinion’ or the career of issues. It is correctly interpreted as a constructed ‘phantom’ which is used by different actors in different arenas as a claims-making and claims-justifying resource. The arena model is particularly useful for taking into account how social media and digital technologies are not just used to disseminate news and ideas and create ‘echo-chambers’ and ‘bubbles’, but, moreover, how they actually mobilize people in ‘connective action’ in shaping and framing issues, and pushing them up the public and political agenda (Benett and Segerberg, 2012; Birkbak, 2016). Meanwhile, there is a plethora of available methods of discourse and argumentation analysis to process and analyze such ‘big data’ (Gee and Handford, 2012).

Rule 10. Use an arena-model and discourse or argumentation analysis in tracking and auditing public debates (including in social media) as input into policy design processes.

In tracing and auditing public debates, the designer follows and maps how citizens and other policy-related actors frame and reframe public issues via their movement in time and space through a multi-media and multi-arena political and policy landscape. This should prepare the designer well for the next step in problem structuring.

Rules-of-thumb for problem exploration and categorizing

After the first stage’s largely descriptive tasks, in the second stage analysis and design comes into its own. What is needed is a first-cut exploration of the consequences for policy of accepting possible problem framings. This means that the ‘same’ problematic situation ought to be, tentatively, depicted as a gap between some clearly stated norms or standards, and more precisely defined (changes in) the problematic situation. Using Cowan’s (1986: 766) model, this second stage is labeled problem categorization – problems are put into a specific category, but only tentatively, without necessarily accepting the standards or models used as basis for policy.

In forming a political judgment on a public issue, one tries to think through the issue from the perspectives of other actors (Arendt, 1968: 241). Only after circling around the issue from several perspectives does one get a better feel for the possibilities and objections against framing a problem in a particular way in an anticipated political exchange between antagonists. Thus, problem exploration and categorization are an important step in arriving at responsible political judgment on problem framings.

Rule 11. Reflective policy designers approach problem exploration as frame experiments.

In his detailed empirical study on practices of reflective designers, Schön (1983: 131–132) shows that problem exploration and categorization is a trial-and-error process of problem framing. First, the problem frames that emerged from the stage of problem sensing must be explicated, formulated and criticized – this frame reflection is a first vision on problem framing. Second, the policy designer tries out all kinds of suggestions for elaborations and redefinitions, or even alternative framings – these frame experiments are the second vision on problem framing. In this stage, no choices are made; hence the process of frame reflection and experimentation remains one of double, sometimes triple vision. One is reminded here of F. Scott Fitzgerald’s definition of a ‘first rate mind’ as someone who can keep two or more contradictory ideas alive and yet not paralyze his thinking and acting.

More often than not, problem exploration and categorization mean imposing well-known disciplinary or professional concepts, standards, models and theories as an ‘overlay’ on the problem frames discovered in social and political debate. Specialists and experts attempt to model, given the selected professional or disciplinary frame, the chain of causal links active in a certain policy area. This may be a simple arrow model, or a set of thousands of mathematically formulated connections, for example in the econometric models used by the Dutch Bureau for Economic Policy Analysis. Such (causal) models are a launching platform for the next, third step.

Rule 12. To a reflective designer, causal model construction by disciplinary experts is a form of frame experimentation.

In this phase, policy analysts and designers have no choice but to rely on experts and specialists (MacRae and Whittington, 1997). After all, they have a semi-monopoly on model building. But the increase of computer-supported possibilities for model construction corresponds to an increase in interactive or even participatory modes of experimental model construction for important policy actors and stakeholders (Rosenhead and Mingers, 2011; Vandenboecke, 2012).

Rule 13. Wherever possible, reflective designers use interactive or participatory modes of soft-systems modeling in frame experiments that cross disciplinary boundaries.

There are many reasons for using interactive model building methods in the case of less-structured problems. The systems dynamics or soft systems methodology in most modeling techniques forces participants to be precise and transparent in distinguishing and clarifying the relations between causes and consequences. By involving participants who normally work under a division of labor given by taken-for-granted organizational boundaries, the modeling exercise will raise awareness of mutual dependencies, and, probably, willingness to cooperate. By letting the most important involved policy actors, with very different perspectives

on the issue, work as a group in modeling the problem, the shared experiences may well pay off later as a team-building effort. However, one should have a keen eye for conditions making for success and failure (Rouwette et al., 2002).

Rules-of-thumb for problem decomposition or diagnosis

Decomposing a problem in more or less independently solvable partial problems is the basis of all problem solving (Simon, 1992). It is cognitively unavoidable also in public policy analysis and design; and even in the case of unstructured policy problems. But in doing so, the policy designer ought to take care that, first, the sum of partial problems keeps alive a 'holistic' problem awareness; and, second, that at least some partial problems have effective and feasible solutions. In problem exploration and categorization, the policy 'knot' was disentangled in clear, but perhaps mutually incompatible or contradictory problem frames and models. Now, in problem decomposition and diagnosis, the policy problem as a set of clear gaps has to be further processed into a set of potentially bridgeable gaps. The practical conjunction between partial problems requires the keeping alive of some convergence on the original problematic conditions.

Sometimes problem decomposition is easy because in (moderately) structured policy problems the decomposition principle is politically unproblematic and technically functional. For example, in 2002 the Dutch government proclaimed as policy objective a government-wide reduction of administrative costs for citizens and firms of 25%. The Department of Housing, Spatial Planning & Environment (VROM) calculated that its 'rule-interference' in corporate and civic life caused administrative costs of €1765 million annually, of which 29% or €505 million ought to be cut back. In order to achieve this, the department established a coordinating team, responsible for the so-called 're-calibration' of departmental legislation, which included several cluster teams, each one representing a specific (sub)sectoral policy domain, to study how cut-backs could be realized in different domains (organized per division), such as the Residence Act, Spatial Planning Act, Environmental Management Act, etcetera.. A separate group was set up to keep track of all proposals and calculate their contribution to total goal achievement.

In less structured and politically contested policy problems, decomposition is not possible without generating a lot of (bureau)political resistance (Australian Public Service Commission, 2007). Problem decomposition may become either a protracted framing tug-of-war, or a bumpy learning process between different views on how to decompose an issue in politically acceptable, and more or less solvable, sub-problems. Such 'joined-up governance' may be achieved, for example, by means of workshops, simulations, policy exercises, elaboration of different policy scenarios or even court-like confrontations between protagonists and antagonists of certain views. In all these cases, the heart of the matter is to systematically expose the most vital policy assumptions of one view to criticism from the alternative view(s) – and vice versa (Mason and Mitroff, 1981). In this way, analysts discover the most plausible and tenable assumptions, positions and arguments to

be later fitted into the policy design. Politically competing problem frames will often remain visible in the choice of decomposed, partial problems. The visibility of competing problem frames may be both analytically useful as parallel experiments (Ellerman, 2014) and politically unavoidable as political compromises.

This may be illustrated with a brief example of the car mobility issue (Hoppe and Grin, 2000). A green problem frame constructs the car mobility problem as excessive demand for mobility and logically decomposes the issue into two partial problems: (1) reduction, or possibly complete standstill, of the increase in demand for mobility, and, (2) spreading the demand for mobility over time and space. A technical-fix frame also produces two sub-problems: (i) substitution of car mobility by other modes of transportation, and, (ii) the design and implementation of entirely new modes of infrastructure. Finally, the individualist, neo-liberal frame also suggests two solution paths: (i) demand-driven expansion of the road system for increased car mobility, or, (ii) more efficient use of available roads by substituting a general road tax for a pay-per-mile-driven approach. One may well defend the position that, taken together, these six sub-problems are somewhat ‘clumsy’, yet also an analytically and politically balanced view (Verweij and Thompson, 2006). For example, from a technical-fix frame it makes sense to explore green tentative solutions for spreading the demand for mobility over time and space. Equally, an individualist-driven expansion of road capacity is compatible with a technical approach. A technical approach may even be indispensable for reducing the demand for car mobility through innovative other modes of transport. From a political point of view, these different problem-solution couplings are not mutually exclusive. From an analytical point of view it may be argued that, together, they ‘cover all bases’ in the sense of addressing all major dimensions of this ‘wicked’ policy knot.

Rule 15. Decomposing larger problems into sub-problems is intellectually and pragmatically unavoidable, either through learning or political struggle; in both cases it is about exposing, comparing and confronting key assumptions in the problem frames under consideration.

One of the most systematic elaborations of this method is Constructive Conflict Methodology (Cuppen, 2012; building on and refining Strategic Assumption Surfacing and Testing (SAST), developed by Mason and Mitroff, 1981). Other methods rely more on building group consensus, like Analysis for Interconnected Decision Areas (AIDA, Friend and Hickling, 1987: 109–173), and morphological analysis (Ritchey, 2011). Especially in this decomposition stage of problem structuring, where solvable problem parts are identified, listening to the voice of implementers and citizens as target groups is absolutely necessary. Politicians and policy entrepreneurs, but creative policy designers and policy generalists too, are inclined to ‘logically’ but over-optimistically argue from available administrative agencies and policy instruments to desired outcomes.. But over-optimistic argumentation lines ought to be exposed to sobering ‘backward mapping’ stories about the action

theories dominating the lifeworlds of citizens and street-level bureaucrats, their real action opportunities, and, most importantly, whether or not available or new policy instruments can realistically hope to influence or nudge these action theories and opportunities at all (Sunstein and Thaler, 2009).

Rule 16. Backward mapping from the implementers' and target group perspectives is part of the learning about key assumptions in alternative policy frames to be used in arriving at a satisfactory problem decomposition.

The crux of balancing forward with backward mapping design styles is that policymakers ought to start thinking – not in terms of idealistic policy goals, neither in tackling the root causes of problems, nor in available toolkits of policy instruments (Howlett et al., 2015; Peters, 2015) – but in terms of realistic problem-solution couplings. This is exactly the point of confluence between problem finding and problem solving. (This is one of the reasons to relativize any step-wise or sequential presentation of this process, the present one included. Unfortunately, ongoing multiple-level streams of events can be represented in words only by the sequential ordering dictated by putting a complex image into words.)

Rules-of-thumb for choice of problem definition

The final step of problem structuring is actually demonstrating, as plausibly as one can, that the problem as set of potentially bridgeable gaps really has effective and feasible solutions. On closer inspection, problem definition is about two types of claims. The first, analytical claim is that the partial problems distinguished are truly solvable. This requires a policy designer to painstakingly elaborate credible means-ends relations in a specific context of implementation. The second, politically even more important claim is that, compared to the original problem as a whole, solving some partial problems is a worthwhile endeavor. In other words, a designer should be able to claim that the amount of net problem reduction is substantial enough. This is a credible claim only if it can be shown that a majority of stakeholders and political representatives would experience the sum of the proposed solutions as an opportunity for improving the problematic situation.

From an analytic-cognitive position, making such claims credible and plausible requires detailed goals-means or ex ante effectiveness evaluation, and some approximation of the logic of multi-criterion analysis (MacRae and Whittington, 1997; Stirling, 2006). By systematically judging proposed solutions to sub-problems in light of a well-selected set of relevant but usually heterogeneous criteria, one arrives at the conclusion that some options are better than others. Through the use of 'score-cards' and other visualization and participatory techniques, multi-criterion evaluation has also been turned into group decision support format (e.g. Nutt, 1989: 409ff).

Rule 17. The choice of policy problem definition is always a political decision, but informed and influenced by goals-means and multi-criterion decision analyses.

But formal multi-criteria analyses exist more as inspiring examples in policy analysis handbooks than in practice (Shapiro, 2016). Practitioners rather ‘shoot from the hip’ and engage in some incrementalist or satisficing heuristics in arriving at conclusions about net problem reduction (Gigerenzer et al., 1999). In many cases of real-life policymaking, satisficing heuristics and strong political pressure decide the choice for merely doable solutions (Grossman, 2014; Lancaster et al., 2016).

This is because the results of formal multi-criteria analyses more often than not raise choices, dilemmas even, that cannot be decided by analysis alone, but require political negotiation, bargaining and logrolling. In this sense, problem definition requires a political decision to stop thinking and shift to public action. The political reality is that, in the case of ‘unsolvable’ problem parts, the resulting policy design will inevitably contain symbolic content. Sooner or later the intellectual debate on problem structuring is cut off, literally, by political decisions in which, consciously or not, politicians take responsibility for the choice of a particular problem definition. This is a forceful reminder that problem definitions come about and ought to be tenable in political environments of rhetoric and debate (not deliberation) and competition for power (not analytical finesse). Many authors disparage symbolic policies as by definition misleading the public, as ‘words that succeed and policies that fail’ (Edelman, 1977). But symbolic policies may also be interpreted as political signals in favour of continued debate and problem-driven research. After all, even though ‘merely symbolic’, for those who will personally experience problematic situations impervious to policy intervention, the political signal is a public acknowledgement of their claims. Sometimes this is even used as a motive to compensate the ‘losers’.

Rule 18. Symbolic policy is politically unavoidable, and may be conducive to continued political debate, prudent deliberation and social learning.

Of course, there is an element of political expediency in such acknowledgements. It may legitimately be interpreted as a gesture to persuade those who politically represent the victims to support, or at least not veto, current policy proposals that address their problems only symbolically. Symbolic policy may also be strategically used as a ‘magic flute’ to attract but mislead less informed parts of the electorate (Edelman, 1977; Hayes, 2001: 88–90, 96). But, if sincere, it is a way to keep the issue on the political agenda, and keep political debate and social learning going. There appears a special role here for civil society associations to keep alive claims around unsolved policy problem parts.

The politics of timing in policy design

Relatively little has been written on the politics of policy design, of which problem finding is a seldom acknowledged element, even though it is its driving force. The politics of policy design may fruitfully be discussed as a battle between two

opposed, equally understandable inclinations (Van de Graaf and Hoppe, 1996: 312–313).

On the one hand, there is the political inclination to readily and quickly cut the Gordian knots of complex problems. Pressures for rapid, real-time policy responses have actually accumulated recently due to the speed up in citizen–government communication and increase in transnational comparative policy knowledge through social media and the internet (Peck and Theodore, 2015). But policy-making organizations and their political and administrative leadership are still slow and hesitant decision-makers. Moreover, the bulk of policy work and implementation relies on standard operating procedures. In these routines, decisions and policy frequently become pre-programmed answers to yesterday’s problems. As argued before, most political decision-making is about the small set of allegedly feasible ‘solutions’, not about finding out about the nature of the problem. Thus, if truly novel problems succeed the well-known older ones, political prejudice or bias and organizational inertia through path-dependency are just around the corner. On the other hand, there is the contrary propensity to be overwhelmed and carried away by the apparent intellectual chaos, complexity or under-structuredness – in short, the cognitive ‘wickedness’ of novel problematic situations. If this tendency gets the upper hand, endless debates, protracted policy formulation processes and political paralysis may ensue. In the politics of design dynamics, then, the problem is to safely navigate the dilemma of stranding on the Scylla of political prejudice and bias, or the Charybdis of intellectual wickedness. Among other things, this requires political skills in setting proper deadlines.

Time and again, analysts and their political overseers face the question whether or not it is wise and expedient to take a next step in the gradual specification and elaboration of problem-solution couplings (Koppenjan, 1990). Further specification seems unwise when policymakers believe that complaints about a current problematic situation – for example, delays in train departures and arrivals– will decrease, maybe even vanish over time. The same goes for problematic situations where the general public may get used to a problem – for example, the risks of traffic accidents, or possible health impacts of exposure to electromagnetic radiation through masts, cell phones, WiFi, etcetera. Overall, specification and elaboration in problem structuring are inevitable, but analysts should not be in a hurry.

Rule 19. Reflective and politically savvy policy designers make progress in specifying policy designs, but with moderation and without political overreach.

As long as stakeholders and the public at large show no signs of converging towards one or a few dominating problem frames, it is prudent to spend time for study, communication and learning. This is especially relevant during problem sensing. It is equally unwise (though more and more common in contemporary polarized politics) to get stuck in some problem frame and accompanying elaborate problem definitions as long negotiations do not yet lead to sufficient political

support and commitment for your position. This is particularly true during problem exploration. Finally, specification and elaboration are appropriate when opportunities for feasible and politically acceptable sub-problem-solution couplings open up and should be used quickly. This applies especially in the transition phase from problem decomposition to definitive choice of problem definition. Politicians and policy entrepreneurs closely heed this advice to exploit windows of opportunity (Kingdon, 1984). Not surprisingly, policymaking frequently resembles a series of temporary settlements or a package deal of partial measures to temporarily put the problem to rest.

Conclusion

All in all, problem structuring is both a cognitive-analytic and a political-interactive process. Good political leadership requires questioning-based policy analysis and design. It is politically inescapable that a problematic situation as sensed by many in society should be processed into some well- or at least more-structured policy problem to become amenable to some sort of problem solution. But only a method of policy design that respects maxims of problem sensitivity, frame analysis and reflection, forward and backward mapping, and prudent tacking between puzzling and powering may achieve a politically responsible and legitimate problem definition. It takes analytical and political acumen to achieve this. On the other hand, who desires to lead the many should not always march in the vanguard. Therefore, thoughtfulness and a good sense for political timing are as important in problem structuring as analytical perceptiveness and political courage. On an optimistic note, the policy designer is like a good gardener: she knows how to bring some order and pattern into the world; but she also knows how much hard work, time and patience it takes. On a more sober, perhaps tragic note, she realizes that policy design will remain a kind of unending Sisyphus labor (Latour, 2003) – in Samuel Beckett’s memorable words: ‘Ever tried. Ever failed. No matter. Try again. Fail again. Fail better’.

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References

- Arendt H (1968) *Between Past and Future: Eight Exercises in Political Thought*. Harmondsworth: Penguin.
- Australian Public Service Commission. (2007) *Tackling Wicked Problems: A Public Service Perspective*. Canberra: Australian Public Service Commission.

- Bardach E (2012) *A Practical Guide for Policy Analysis. The Eightfold Path to More Effective Problem Solving*, 4th ed. Los Angeles: SAGE.
- Benett WL and Segerberg A (2012) *The Logic of Connective Action: Digital Media and the Personalization of Contentious Politics*. Cambridge: Cambridge University Press.
- Birkbak A (2016) *Caring for Publics. How Media Contribute to Issue Politics*. PhD Thesis. Aalborg University, DK.
- Borins S (2011) *Governing Fables: Learning from Public Sector Narratives*. Charlotte, NC: Information Age Publishing.
- Colebatch H, Hoppe R and Noordegraaf M (eds) (2010) *Working for Policy*. Amsterdam: Amsterdam University Press.
- Colebatch H (in press) The idea of policy design: Intention, process, outcome, meaning and validity. *Public Policy and Administration* 33: 4.
- Considine M (2012) Thinking outside the box? Applying design theory to public policy. *Politics and Policy* 40(4): 704–720.
- Cowan DA (1986) Developing a process model of problem recognition. *Academy of Management Review* 11(4): 763–776.
- Cuppen E (2012) Diversity and constructive conflict in stakeholder dialogue: Considerations for design and methods. *Policy Sciences* 45(1): 23–46.
- Dery D (1984) *Problem Definition in Policy Analysis*. Lawrence: Kansas University Press.
- Dunlop CA, Maggetti M and Radaelli CM (2012) The many uses of regulatory impact assessment: A meta-analysis of EU and UK cases. *Regulation and Governance* 6(1): 23–45.
- Edelenbos J, van Buuren A and van Schie N (2011) Co-producing knowledge: Joint knowledge production between experts, bureaucrats and stakeholders in Dutch water management projects. *Environmental Science and Policy* 14(6): 675–684.
- Edelman M (1977) *Political Language: Words That Succeed and Policies That Fail*. New York: Institute for the Study of Poverty.
- Edwards AR and de Kool D (2015) *Kansen En Dilemma's Van Digitale Democratie – Wat Kan Digitale Burgerbetrokkenheid Betekenen Voor Het Nederlandse Parlement*. Den Haag: Rathenau Instituut.
- Ellerman D (2014) Parallel experimentation: A basic scheme for dynamic efficiency. *Journal of Bioeconomics* 16(3): 259–287.
- Elmore R (1985) Forward and backward mapping: Reversible logic in the analysis of public policy. In: Toonen Th and Hanf K (eds) *Policy Implementation in Federal and Unitary Systems*. Dordrecht: Kluwer, pp. 33–70.
- Friend J and Hickling A (1987, 2005) *Planning Under Pressure. The Strategic Choice Approach*, 3rd ed. Amsterdam: Elsevier.
- Fung A (2003) Recipes for public spheres: Eight institutional design choices and their consequences. *Journal of Political Philosophy* 11(3): 338–367.
- Gale T (2003) Realizing policy: The who and how of policy production. *Discourse: Studies in the Cultural Politics of Education* 24: 51–65.
- Geer JP and Handford M (eds) (2012) *The Routledge Handbook of Discourse Analysis*. London and New York: Routledge.
- Gigerenzer G, Todd PM and ABC Group (1999) *Simple Heuristics That Make Us Smart*. Oxford: Oxford University Press.

- Grin J and van de Graaf H (1996) Implementation as communicative action. An interpretive understanding of interactions between policy actors and target groups. *Policy Sciences* 29(4): 291–319.
- Grossman M (2014) *Artists of the Possible: Governing Networks and American Policy*. Oxford: Oxford University Press.
- Hajer MA (2009) *Authoritative Governance: Policymaking in the Age of Mediatization*. Oxford: Oxford University Press.
- Hallsworth M, Parker S and Rutter J (2011) *Policy Making in the Real World. Evidence and Analysis*. London: Institute for Government.
- Hayes M (2001) *The Limits of Policy Change. Incrementalism, World View, and the Rule of Law*. Washington, DC: Georgetown University Press.
- Hilgartner S and Bosk CL (1998) The rise and fall of social problems: A public arenas model. *American Journal of Sociology* 94: 53–78.
- Hisschemöller M and Hoppe R (1995) Coping with intractable controversies: The case for problem structuring in policy design and analysis. *Knowledge and Policy* 8(4): 40–60.
- Hogwood B and Gunn LA (1984) *Policy Analysis for the Real World*. Oxford: Oxford University Press.
- Hoppe R (1989) *Het beleidsprobleem geproblematiseerd: over beleid ontwerpen en probleemvorming*. Muiderberg: Coutinho.
- Hoppe R (1999) Policy analysis, science, and politics: From “speaking truth to power” to “making sense together”. *Science and Public Policy* 26(3): 201–210.
- Hoppe R (2010) Institutional constraints and practical problems in deliberative and participatory policy making. *Policy & Politics* 39(2): 163–183.
- Hoppe R (2010, 2011 soft cover edition) *The Governance of Problems. Puzzling, Powering, and Participation*. Bristol: Policy Press.
- Hoppe R and Grin J (2000) Traffic problems go through the technology assessment machine. A culturalist comparison. In: Vig N and Paschen H (eds) *Parliaments and Technology: The Development of Technology Assessment in Europe*. Albany: SUNY Press, pp. 273–324.
- Hoppe R, van de Graaf H and Besseling E (1995) Successful policy formulation processes: Lessons from fifteen case experiences in five Dutch departments. *Acta Politica* 30(2): 153–188.
- Hoppe R, Jeliaskova MI, van de Graaf H, et al. (1998) *Beleidsnota's die (door)werken. Handleiding voor geslaagde beleidsnota's*. Bussum: Coutinho.
- Howlett M (2011) *Designing Public Policies: Principles and Instruments*. London: Routledge.
- Howlett MI, Mukherjee J and Woo J (2015) From tools to toolkits in policy design studies: The new design orientation towards policy formulation research. *Policy & Politics* 43(2): 291–311.
- Jasanoff S (1990) *The Fifth Branch. Science Advisers as Policymakers*. Cambridge and London: Harvard University Press.
- Joly PB and Assouline G (2001) *Assessing Public Debate and Participation in Technology Assessment in Europe (Adapta)*. Final Report. Grenoble INRA/QAP Decision, Grenoble, France.
- Jordan AJJ and Turnpenny JR (eds) (2015) *The Tools of Policy Formulation. Actors, Capacities, Venues and Effects*. Cheltenham UK, Northampton MA: Edward Elgar.
- Kingdon JW (1984, 2003) *Agendas, Alternatives and Public Policies*, 2nd ed. New York: Longman.

- Koppenjan JFM (1990) Definiëring Van Complexe Problemen Door De Overheid: Balanceren Tussen Ruim En Precies. *Beleidswetenschap* 1: 21–46.
- Lakoff G (2009) *The Political Mind. A Cognitive Scientist's Guide to Your Brain and its Politics*. New York: Penguin Books.
- Lancaster K, Ritter A, Hughes C, et al. (2016) A critical examination of the introduction of drug detection dogs for policing illicit drugs in New South Wales, Australia using Kingdon's 'multiple streams' heuristic. *Evidence & Policy* Epub ahead of print. DOI: 10.1332/174426416X14683497019265.
- Latour B (2003) What if we talked politics a little? *Contemporary Political Theory* 2: 143–164.
- Lejano R, Ingram M and Ingram H (2013) *The Power of Narrative in Environmental Networks*. Cambridge: MIT Press.
- Lindblom ChE (1968) *The Policymaking Process*. Englewood Cliffs, NJ: Prentice Hall.
- MacRae D Jr and Whittington D (1997) *Expert Advice for Policy Choice. Analysis and Discourse*. Washington, DC: Georgetown University Press.
- Mair P (2013) *Ruling the Void: The Hollowing of Western Democracy*. New York: Verso.
- Mason R and Mitroff II (1981) *Challenging Strategic Planning Assumptions. Theory, Cases, and Techniques*. New York: John Wiley.
- Mitroff II and Silvers A (2010) *Dirty Rotten Strategies. How We Trick Ourselves and Others into Solving the Wrong Problems Precisely*. Stanford: Stanford Business Books.
- Nutt PC (1989) *Making Tough Decisions. Tactics for Improving Managerial Decision Making*. San Francisco and London: Jossey-Bass.
- Patton C, Sawicki D and Clark JJ (2013) *Basic Methods of Policy Analysis and Planning*, 3rd ed. Oxon and New York: Routledge.
- Peck J and Theodore N (2015) *Fast Policy. Experimental Statecraft at the Thresholds of Neoliberalism*. Minneapolis and London: University of Minnesota Press.
- Peters GB (2015) *Advanced Introduction to Public Policy*. Cheltenham: Edward Elgar.
- Radin BA (2013) *Beyond Machiavelli: Policy Analysis Reaches Midlife*, 2nd ed. Washington, DC: Georgetown University Press.
- Rein M and White S (1977) Policy research: Belief and doubt. *Policy Analysis* 3: 239–271.
- Renn O (1992) The social arena concept of risk debates. In: Krimsky S and Golding D (eds) *Social Theories of Risk*. Westport: Praeger, pp. 179–196.
- Ritchey T (2011) *Wicked Problems – Social Messes. Decision Support Modellen with Morphological Analysis*. Heidelberg: Springer.
- Roe E (1994) *Narrative Policy Analysis. Theory and Practice*. Durham: Duke University Press.
- Rosenhead J and Mingers J (eds) (2011) *Rational Analysis for a Problematic World Revisited. Problem Structuring Methods for Complexity, Uncertainty, and Conflict*. Chichester: John Wiley.
- Rouwette EJ, Vennix J and van Mullekom T (2002) Model building effectiveness: A review of assessment studies. *System Dynamics Review* 18(1): 5–45.
- Schön DA (1983) *The Reflective Practitioner*. New York: Basic Books.
- Schön DA and Rein M (1994) *Frame Reflection: Towards the Resolution of Intractable Policy Controversies*. New York: Basic Books.
- Shapiro S (2016) *Analysis and Public Policy. Successes, Failures and Directions for Reform*. Cheltenham and Northampton: Edward Elgar.
- Simon H (1992) *Sciences of the Artificial*. Cambridge: MIT Press.

- Snellen IThM (2002) Conciliation of rationalities: The essence of public administration. *Administrative Theory and Praxis* 24(4): 323–346.
- Stirling A (2006) Analysis, power and participation: Justification and closure in participatory multi-criteria analysis. *Land Use Policy* 23: 95–107.
- Sunstein CP and Thaler RH (2009) *Nudge: Improving Decisions About Health, Wealth and Happiness*. London: Penguin.
- 'tHart P, Wille A, Boin P, et al. (2002) *Politiek-ambtelijke betrekkingen in beweging*. Amsterdam: Boom.
- Turnbull N (2006) How should we theorise public policy. Problematicity and problem solving. *Policy and Society* 25(2): 3–22.
- Turnbull N (2013) The questioning theory of policy practice: Outline of an integrated analytical framework. *Critical Policy Studies* 7(2): 115–131.
- Van de Graaf H and Hoppe R (1996) *Beleid en politiek. Een inleiding in de beleidswetenschap en de beleidskunde*. Muiderberg: Coutinho.
- Vandenboecke Ph (2012) *Working with Wicked Problems*. Brussels: King Baudoin Foundation.
- Verweij M and Thompson M (eds) (2006) *Clumsy Solutions for a Complex World*. Basingstoke: Palgrave.
- Webber DJ (1992) The distribution and use of knowledge in the policy process. In: Kelly RM and Dunn WN (eds) *Advances in Policy Studies Since 1950*. New Brunswick NJ and London: Transaction Publishers, pp. 383–418.
- Weimer DL and Vining AR (1999 3rd ed, 2010 5th ed) *Policy Analysis. Concepts and Practice*. Upper Saddle River, NJ: Prentice Hall.
- West WF (1988) The growth of internal conflict in administrative regulation. *Public Administration Review* 48(4): 773–382.
- Yankelovich D (1991) *Coming to Public Judgment: Making Democracy Work in a Complex World*. Syracuse NY: Syracuse University Press.