Policy Thinking: From 'If ... Then' to 'What If ...'

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Now, more than ever before, good advice is held to be a function of its knowledge base. Advisers seek connections between information, knowledge, policy and outcomes. Given issue complexity, multiple values and competing sources of information, lively debate focuses on various qualities of knowledge, and its production, management and relevance. Some policy advisers and decision makers equate 'good' knowledge with expert and scientific 'evidence'. Others proclaim the worth of local and 'interpretive' knowledge, which arises from consultation, dialogue and mutual learning processes. Unfortunately, debate centred on the qualities of knowledge tacitly assumes that good qualities automatically increase the odds of good policy. In my classes, I point to the floor, and ask participants to imagine it occupied by a gold-star 'evidence base'. I ask them to imagine walking up to that heap, and begging it to speak. They laugh, for no matter how much information and knowledge is amassed, how excellent its qualities, policy advice is a function of both knowledge *and* capable thinking and reasoning.

effectively pursue 'what if ...' inquiry, who think 'laterally' and who exhibit a bloodhound's skill in nosing out promising ideas are held in the highest esteem by their peers and superiors.

Two additional modes of thinking fall between the critical and the creative (see Table 1). First, multidisciplinary thinking, which is essentially the application of multiple critical frameworks, differs from basic critical thinking in that the inquirer uses different lenses to investigate the same issue and emphasises the integration of the resulting knowledge. Some proponents of creativity (or its synonym, 'innovation') equate it with the excellent conduct of tasks *within* a critical framework, whether single- or multidisciplinary, noting that 'creativity is the child of technical excellence'. Others, however, who sustain a clear distinction between the realms of analytic and innovative reasoning, evoke a second additional mode of thinking by claiming that both critical and creative thinking is needed – to one degree or another, depending on context – to produce excellent advice.

Table 1: Modes of thinking

Modes of thinking			
	Critical/Analytic	**Multidisciplinary**	**Creative/Critical**	**Creative/Synthetic**
Inquiry	If … then	If... If … If ... then	What if ... then	What if ...
Source of new ideas	Application of rules	Integration, synthesis	Experience, knowledge, logic	Hunches, open inquiry

Current rhetoric suggests a dichotomy between thinking that is either critical and analytical, or creative and synthetic. Managers and decision makers value – as they should – analytical and technical competency in advice. They give keen attention to analysts' 'if ... then' inquiry and its application to scientific evidence in justifying recommended actions. Nevertheless, calls for 'innovative' or 'creative' thinking resound in contemporary policy-making circles. Advisers who

This article is about thinking for policy advice. (See Box 1 for some definitions of thinking, reasoning and related terms.) Guidance for critical thinking is readily available. But regardless of whether creative thinking is part of, or complements, analytical thinking, little practical guidance is available for increasing its amount and quality. As a result, policy advice may remain poor in 'new' ideas, even as new ideas are widely regarded as keys to progress.

Box 1: Some definitions

In everyday use, and as used generally in this article, 'thinking' serves for a range of related concepts. This box introduces some of the mental activities and qualities as they apply in policy analysis, with assistance from the *Oxford English Dictionary*.

Thinking is baseline mental activity – cogitation, meditation or similar. To think is to form a thought or other product of a mental process, to exercise the mind, to form connected ideas of any kind; to have, or make, a train of ideas pass through the mind.

Reasoning refers to a particular kind of 'train of ideas', in which one judgement is deduced from another or others which are given, or, more loosely, in which various given elements are ordered in some manner. That is, to reason is to think in a connected and sensible manner.

In the public sphere we are particularly interested in reasoning that is both 'public' and 'practical'. *Public and practical reasoning* is a social and ethical interaction regarding what we should or will do. The locus or ownership of reasoning is public. It may be collective, in a 'civic discourse' manner, or it may be done by individuals, such as public servants and politicians, on behalf of the public. Its purpose is decision making. It draws on reasoners' beliefs and experiences. It relates to some specific impetus to act, such as a defined policy problem that requires a decision, and it focuses on guiding action. Public and practical reasoning, whether good or not, thus has real-world consequences.

Reasoning as I have defined it is systematic, but it may, or may not, be logical. *Logic* is a slippery term that connotes both a particular way of 'exercising the mind' by making inferences, and the 'art' or 'science' involved in making inferences.

Two examples

Before turning to more detailed consideration of policy thinking, I set out the main argument (in the next section) with the assistance of two examples presented

here. The first example illustrates the emergence of a technically competent researcher's new idea. Richard Ellwood reports what he calls 'critical research insights' in the case of poverty policy. Using longitudinal data on family income, Ellwood shows that there are two sides to poverty and public assistance:

> Most of those who were *just becoming needy* for the first time and most of those who were *just beginning aid* for the first time had relatively short episodes. Thus, most of those who had ever had an episode of poverty or public assistance receipt moved off assistance fairly quickly. Yet, seemingly in contradiction, most of those *poor at a point in time* or *receiving aid at a given moment* [i.e. those picked up in 'snapshot' cross-sectional data studies] were in the midst of a much longer period of need [emphasis in original].

Since only a small minority of new entrants at any point in time become long-term recipients of assistance, Ellwood argues for a shift in policy focus. The new approach would address ways of reducing long-term welfare use, why a person's poverty status changes, and how to 'dampen movements into poverty and facilitate movements out of poverty'.

The 'hairdresser-counsellor' is an example of creative thinking based in everyday experience. As reported in the *Chicago Sun Times* on 25 April 2006, 'Cut It Out' is a nationwide programme in the United States to train hairdressers to recognise warning signs of abuse and safely refer clients to local resources. This programme was initiated by salon professionals, but clearly resonates with policy knowledge. The banner headline on the Cut It Out website reports that 31% of women report being physically abused by an intimate partner at some point in their lives. Yet a Chicago official cites evidence that most victims of domestic violence never call the police or go to social service agencies. Hairdressers have an intimate association with their clients. Cut It Out trains them to observe bruises and places where hair has been pulled out, or to appropriately interpret 'No, he won't let me' when they suggest a new style. Clients may then be directed to discreet referral cards, which salons report constantly need replenishment.

What Elwood knew scientifically and practically grounded his problem-solving, 'if ... then', thinking, which led to an insight with significant policy

implications. With extensive experience in both policy and research, Ellwood knew enough about poverty and welfare dependence to resolve the 'seeming contradiction' in new longitudinal data. Equally, he was able to connect the resolution of the data issue to an appropriate policy focus. Someone trained in data analysis, but lacking Ellwood's policy experience, might measure and observe, but not interpret effectively. Similarly, someone steeped in a particular government's welfare policy might not have had the selectivity of focus to shift attention to the 'switch points' into and out of poverty.

The hairdresser-counsellor example is emblematic of what inquirers can come to know for themselves as they observe, deliberate, or learn from their own or others' experiences through a creative 'what if ...' inquiry. In these cases, no particular technical expertise is called upon, nor must the analyst already be a subject expert. The expert on domestic violence and the salon owner are equally able to ask, 'What if we found a way to safely make referrals in a salon?' and to follow through to organise training and materials.

The argument in a nutshell

If policy advice is to address more effectively issues like the poverty-welfare dependency or the domestic violence referral challenges, I argue that we can do with less attention to specific facts and mechanistic knowledge-handling skill. Instead, we need to pay more attention to the analyst-advisers' inquiry, and to the internal resources from which that inquiry emanates. Internal resources include a person's natural capacities, strategies, thoughts, experiences and disciplines, and their mental activities in the process of reasoning.

A crucial capacity is the ability and willingness to embrace contradiction, conflict, or what Charles Peirce, the late 19th-century pragmatic philosopher, called 'genuine doubt' in order to be effectively primed for new ideas. Embracing genuine doubt means pausing at the open point in an inquiry (though not for too long – many open inquiries need to be closed by some resolution, however provisional). The analyst must resist artificially constraining the 'ifs' in order to achieve a tidy resolution. The analyst must be able to initiate new chains of ideas by engaging fully in the inquiry.

Embracing genuine doubt will often lead an inquirer to consider the relational nature of social or human behaviour. Often what is new in policy is hidden in plain

sight, just as hairdressers have been talking and listening to clients' woes since the first commercial haircut. Detecting something new requires the analyst to adjust the focal depth of her inquiry, to reframe the question. We know, for instance, that out of all the people who know how much alcohol is safe or legal to consume before driving, and who drink past that point, only some will then drive. Researchers often examine the aggregate characteristics of the drivers and the resisters, compare the two groups, and propose some interventions to turn drivers into resisters. Nobel laureate Thomas Schelling, a genuine doubter and reframing wizard, suggests that many people are simultaneously drivers and resisters. Among the drink drivers on any given night are resisters whose self-control has lapsed. The relevant comparison may be between person *A* who has vowed never to drive drunk and person *A* who nevertheless drives drunk.

In addition, more attention is needed to the collective resources that can be brought to bear on policy advice. These, most simply, include the combined internal resources of others – contemporary or historical – that are available to the analyst. In particular, collective resources are available in the institutional and political contexts in which an inquirer engages, and might include essentially, and not only instrumentally, ecological and cultural resources.

Commentators, in the main, assert that poor analysis is analysis that fails to use information well, or to select and apply models correctly, and so on. Public policy and social research educators are urged to improve the technical competency of graduates and practitioners. I argue a different point. Education and professional development, while continuing to support analysts' development of problem-solving analytical approaches, might inspire analysts to rely somewhat less on external aids to thinking – the raw ingredients and tools such as stocks of information, pre-set problems, textbook solutions, 'best' or 'smart' practices, and knowledge management systems – and more on their experience and innate capacity to come up with new ideas worth considering.

The case for new ideas from policy thinking

Paul Callaghan, reflecting on a project supported by the Smash Palace Fund that brought writers and physicists together to imagine and share in the 'what if ...' activities at the centre of both art and science, quotes Richard Feynman on imagination. The conviction holds equally

for policy, as I show with my bracketed inserts:

> Our kind of [*policy*] imagination is quite a difficult game. One has to have the imagination to think of something that has never been seen [*suggested/tried*] before, never been heard of before. At the same time the thoughts are restricted in a straightjacket, so to speak, limited by the conditions that come from our knowledge of the way nature [*society/human behaviour*] really is.

'Innovation' and 'creativity' have not always been part of the analyst's job description. Even so, a two-sided, or hybrid, capacity has long been endorsed. As early as 1979, in *Speaking Truth to Power*, Wildavsky cast analysis as both social interaction (politics and preferences) and intellectual cogitation (planning and causal knowledge). Since then, no one can have missed the 'art and craft' or 'art and science' descriptions which he originated. He wrote that 'analysis is imagination' and 'analysis is creating and crafting problems worth solving'. More recently, we have Bardach, author of a slim distillation of advice to analysts: 'policy analysis is more art than science. It draws on intuitions as much as methods'.

However, in Wildavsky's and Bardach's texts, and indeed in all my investigations, I have found that the practical meaning of 'the art of policy analysis' is either ignored once the dutiful rhetorical flourish is ended, or it is applied, in its craft interpretation, to elements of technical professional skill: skill in the selection and use of materials (information, data) and tools (methods, models), and skill in tailoring or constructing policy solutions from generic inputs (theories, interventions, New Zealand-specific conditions). The 'imaginative art' is simply not taken up in the sense in which Feynman presented it: as the genesis of new ideas, or seeing-the-as-yet-unseen. Instead, in an environment of ever more information, ever less time, ever more complex problems, and ever less taste for inadvertent failure, the call goes out for improved rigour, greater technical competency and superior critical thinking skills.

Nevertheless, there are indications that the profession may be ready to embrace the 'imaginative' alternative. Calls for innovation and creativity arise often in the context of hard or perplexing policy challenges. In these cases, analysts may face an abundance of information, but also a long history of policy development and change. For example, we have a

good deal of information on behaviours that endanger health and safety, and yet frequently wonder whether policies are making much progress. It is often too easy to traverse the same old ground. In an information-rich environment, analysts working conventionally face diminishing returns as they work and rework their explanatory models in ever finer detail. Different thinking might offer fresh ways of looking at the 'known' and fresh ideas about what to do.

The challenges of 'joined-up' or 'cross-cutting' policy making highlight another limitation of conventional approaches. While these terms call attention to the fact that social reality is holistic, government responses – and the research and analysis that underpin them – tend to be fragmented. Disciplinary models, theories and variables of all descriptions comprise the piecemeal ingredients for whole-of-government efforts, but sentence specialist analysts to painstaking re-assembly work. Different thinking might provide an integrating framework to enable them to work more productively with the inevitable fragments of knowledge.

Even when attempting to address hard and cross-cutting issues differently within an integrating frame of reference, analysts may retain a 'fix-it' orientation. In this view, cross-cutting issues, and even genuinely complex issues, are just bigger and more unruly than the old ones: analysts need to try harder to get answers, make better use of what they know, have better strategies to exert greater control over the unpredictable mess. But what happens if that control remains elusive? If, try as they might, analysts have scant ground to stand on before it is swept away by some new current? Different thinking might facilitate the design and continual improvement of flexible, resilient, perhaps systemic, policy suited to a complex situation that lacks 'answers'. A recent statement from the Hon Pete Hodgson on obesity evokes this challenge: 'making rules before changing attitudes is pointless. This is about changing our lifestyles. Quick fixes don't happen. No country has cracked this or begun to. We want to be among the first.'

Robert Klitgaard, reflecting on Schelling's contribution to policy analysis, notes that

> in real policy making the intellectual problem is often ... how to discover, how to be more creative about, the objectives, the alternatives, and the constraints. In other words, how to

understand, expand, and enrich the 'if'. The rejected [rational] paradigm says that the policy maker's problem is deciding among many given courses of action. Schelling's version turns this radically around. The problem is understanding, indeed generating, the objectives and the range of alternatives. Once policymakers have done that, they usually do well at making decisions. They are already pretty good at the 'then' part; they may need help on the 'if'.

The time appears ripe in New Zealand for moving beyond new-thinking rhetoric to practical, enhanced production of the 'if'. In the lead article of this journal's first issue, Gary Hawke, writing as head of the School of Government, and Michael Wintringham, writing as the outgoing state services commissioner, noted that 'governments want a public service which is innovative, able to respond to new challenges and not merely one which maintains familiar routines'. They further noted that agencies need to adjust 'international best practice' with understanding of the local context, which requires 'creativity and innovation'.

Alternative types of thinking and reasoning

In this section I contrast critical thinking with creative thinking, and other overlapping and interrelated types of thinking that may, or should, be exercised by otherwise competent analytical or critical thinkers. However, there are plenty of common elements among the various modes. In particular, they all imply a certain searching and discerning inquiry, grounded in the requirements of public and practical reasoning. It is both possible and necessary, in my view, for policy thinkers to move beyond stale arguments that critical and creative thinking are ontologically and epistemologically too different to be joined together.

Analytical, or critical, thinking

In the State Services Commission's list of core competencies for policy analysts, two types of thinking skills are noted, the first of which is analytical:

the ability to analyse issues from a multi-disciplinarian focus, to unbundle problems and reconstitute them, to develop concepts based on sound theoretical and empirical knowledge, to be logical, to critique and be sceptical, to perceive the requirements for action or implementation, and to simplify complex problems.

Analysts break apart a problem, seeking to understand its components and relationships, then address the search for a solution by considering the array of 'evidence' that helps to explain the components and relationships. Careful logical work results in the selection of the 'best' advice to offer a decision maker. Great critical thinkers work brilliantly with existing knowledge to reach a definitive conclusion. It is *Star Trek*'s Spock's exemplary 'if ... then' reasoning, as summarised by Walters: Spock can 'get to the heart of an argument by stripping through rhetorical gloss, emotional ephemera, and cognitive confusion'. The critical thinker, Walters continues, 'draw[s] conclusions only when there is enough evidence to warrant them and refuse[s] to go beyond the limits of logical probability'. Critical thinking can be explained by a series of logical rules. It is also entirely reactive, finding application to existing arguments and problems.

Within this overall paradigm, creativity shows in two activities. First, after taking a problem apart, analysts seek to recombine elements, to reconstitute them in more informative ways. Second, creativity emerges in the thinking of the most adept critical thinkers. Such a person knows the rules of problem solving so thoroughly that she can apply them in new ways and in new situations. Dora Costa and Matt Kahn, for example, used economic thinking to discover how social capital worked in the American Civil War. They showed why some soldiers risked death despite ubiquitous low pay and weak punishment strategies, while others shirked their duties.

Creative, or design, thinking

In the State Services Commission's list, the second thinking competency is defined as 'innovative'. It is 'the ability to think laterally about a policy issue, to challenge existing concepts and assumptions, and to propose creative alternatives'. Creative thinking is this domain of 'what if ...'. Walters contrasts the pure critical thinking of Spock with tacit, non-reductionist, non-sequential, hunch-pursuing thinking. Many state servants exhibit such thinking: the social worker who develops a feeling for 'risks' in a household, the teacher who works out a way to engage a previously uninterested student, or the conservationist who conceives of land encircled by a predator-proof fence. Creative thinking,

by definition, enables a person to formulate new ideas, and, indeed, new problems. It has also been called 'synthetic' thinking, which draws attention to making connections between seemingly disparate pieces of a puzzle. Its outputs can then become inputs for critical thinking. Creative thinking naturally retains wholes, and concentrates on broad patterns rather than fine detail. Significantly, creative thinking arises within a discrete context and on the basis of a background of established knowledge and conventional perceptions. It is not a case of 'anything goes'. 'What if ...' constructions must be genuinely capable of extending understanding or action (not merely odd or unconventional).

'Design' thinking is a special case of creative thinking, with an express practical aim. It is the practical reasoner's creative thinking. Whether one is designing a toaster or a local tourism campaign, design thinking skills include: objective-led, constrained inventiveness; ability to visualise; bias for adaptivity (solutions that not only solve the immediate problem but can be adapted to changing demands and needs); systemic vision; ability to use language to reveal and explain patterns and distil complex phenomena to their essence; self-governing practicality (tempering unconstrained creativity with practicality); and the ability to work systematically with qualitative information.

Case-based/analogical/legal reasoning and interpretation

Legal reasoning is Janus-faced, mindful of precedent, encompassing both a backward-looking conserving component and a forward-looking creative one. Treating cases as discrete, but composed of a number of elements, analysts 'solve' new problems by analogy and controlled interpretation of the current case with others. Analogical thinking works with patterned wholes, unlike analytical thinking, which seeks to unbundle the elements. Its logic is abductive, characterised by the creation of plausible hypotheses (see Box 2).

Cognitive scientists have shown that people naturally think with patterns, and with vague or approximate categories. A variable, such as 'health' or 'old' or 'fluent', has blurred, or 'fuzzy', edges. In fuzzy set theory, degrees of set membership are allowed, such as 'fully healthy' and 'neither healthy nor unhealthy', using categories established by the researcher. Fuzzy logic, underpinned by analogical reasoning, allows social scientists to make

Box 2: Abductive logic

Recently, *abduction*, a mode of logic first defined by Aristotle, has been revitalised in applications ranging from artificial intelligence and criminal investigation to business strategy. Following Peirce, abduction is the mode of inquiry for making plausible explanations for interesting or puzzling observations. Abduction produces an initial inference, which can be further investigated via inductive and deductive rules: some observed anomaly leads to a hypothesis that would (if true) explain the anomaly.

For example, the Ministry of Social Development recently investigated Sickness Benefit and Invalid Benefit clients' needs and aspirations by drawing on the belief systems, values and attitudes of the clients themselves. In a small pilot study, the research team observed a suggestive difference in the responses of Māori and New Zealand Europeans to the benefit system. While 14 of 20 New Zealand Europeans in the study were associated with the 'unhappy' or 'negative' attitude clusters (e.g., having a 'sense of being entitled to support' or a 'sense of being a victim of stigma'), all Māori who showed strong views were associated with 'happy' or 'positive' attitudes. This observation could be followed up with more study and discussion with caseworkers.

Abduction, crucially, describes a wide range of intrinsically creative acts of thought sparked by perception. An abductive thought may be an insight, as in Archimedes' original eureka moment in the bath. Abduction comes into play when a thinker forms a metaphor to convey a fuzzy, relational or holistic resemblance (e.g., of a school as a 'prison' or a 'garden'), and when she, like Sherlock Holmes, deciphers a clue or detects a pattern. Finally, abduction is the logical means by which a thinker resolves the *meaning*, for her, of some facts, patterns and so on.

inferences based on such vague concepts systematically. It sets up 'if ... then' rules but applies them holistically, as in the rule, 'if a person is unhealthy, then treat with care', where both 'unhealthy' and 'care' can vary over

a continuous range. Fuzzy logic in policy analysis can assist in the detection of similarities and differences between cases and in systems analysis.

Strategic thinking

Strategic thinking contributes to a form of practical reasoning specifically highlighting the consideration of assumptions and alternative courses of action where there is significant and challenging uncertainty, and where there is heightened recognition that new courses of action are needed. A prominent school of strategic thinking explicitly evokes thinking's creative qualities. Liedtka defines strategic thinking as a blend of critical and creative thinking. She notes that it is abductive, future-focused and inventive. Similarly, Mintzberg notes that strategic thinking is a synthesising process utilising intuition and creativity, whose outcome is 'an integrated perspective of the enterprise'. The strategic thinker marshals a broad range of inputs – existing knowledge, constraints, objectives, multiple points of view and so on – and tests various configurations for their coherence and fit within the given parameters. Strategic thinking exemplifies continuous learning, involving trial and error, iteration and the 'emergence' of learning.

Reflective thinking

Reflective thinking is not directly practically focused, but instead serves to strengthen the practical thinker's capacities. In thinking reflectively, an individual inquires inwards to help refine her understanding of an experience, which may lead to changes in her perspectives and in subsequent behaviours that result in turn in new insights and deeper understandings of her experiences. Reflection is evaluative and judgemental. It allows for the interconnections between observations, past experiences and judgement to come to the fore in decision making. It suggests the meaning of experience and promotes a deep approach to learning because it encourages problem reframing, questioning assumptions and considering multiple perspectives. Importantly, reflective thinking is invoked when analysts look at the moral dimensions of their work, which can lead to modified practices in the future, or to more direct actions, such as protest.

Collective thinking and wisdom

Like reflective thinking, collective thinking can work indirectly to strengthen other thinking. (It can also

malfunction, a phenomenon known as 'groupthink'.) However, whereas reflective thinking must be specifically attended to if it is to be of value (and so is often considered a luxury by continually time-pressed public servants), all thinkers automatically tap into the broader flow of human knowledge and experience to some degree. At one level, this statement merely acknowledges that culture and society condition our thoughts by providing language and selecting facts and theories for our possible attention. However, a 'switched-on' thinker is alert to these influences and actively copes with them. At a somewhat less obvious level, the notion of collective thinking suggests that, particularly with public and practical reasoning, knowledge is systemic. No one person can have the whole answer.

Further, in everyday usage 'wisdom' – although conceived as an individualistic quality – is defined with reference to some jointly produced knowledge and applies, according to Baltes and Staudinger, to the 'fundamental pragmatics of life', which are, at least in part, social. That is, despite the guru on the mountain-top cliché, a person cannot be 'wise' without rich practical knowledge, and knowledge of the relativities of values and their social priorities. In addition, the 'wisdom of crowds' attracts contemporary interest. Especially as popularised by Surowiecki, in a wide range of examples, the many reach better decisions than the few, even if the few are considered 'experts'. Finally, wisdom is creative. For McKenna and Rooney, wisdom arises in a 'subjective, transcendent, imaginative mental process'.

Towards a renewed focus on the inquirer and the inquiry

The time is ripe to consider how educators and managers can better encourage analysts, new and mid-career, to think creatively using cases and design thinking, and to draw more effectively upon reflective and collective thinking. In this final section I propose some ways to support and enhance other ways of thinking. First, however, I consider the case that, notwithstanding the interrelatedness of critical and creative thinking, we would be best advised to focus solely on improving analysts' critical capacities.

Do nothing/focus solely on increasing the rational critical skills of analysts

The case against increased emphasis on teaching and developing creative thinking includes three arguments.

First, if creativity is viewed as a higher-order skill, then users have to be ready and able to use it. There may be concerns that people are expected to run before they can walk. Undue focus on creativity might undermine the priority of analytic and critical capacity. Second, even if we did try to develop more creative analysts, they would not last. They might become frustrated at the failure of politicians and other officials to take up their ideas. Or they might find their ideas usurped by a political system that reserves for itself the right to be creative. Third, emphasising creativity could create an upsurge in pseudo-creative razzle-dazzle, attracting people with modest technical skills but over-sized notions of the worth of their ideas. The clear communication of critical thinking might be stymied or perverted in a more hyped-up atmosphere.

Ultimately, the reasons against focusing more on creative thinking and its hybrids lack persuasiveness. Pure creative thinking will remain a minority occupation for most policy advisers. But creative, abductive thinking is natural and it would require draconian, not to say counter-productive, methods to check it. Nurturing creativity is not zero-sum with developing critical thinking skills. Running through the case against is a fear that the overall quality of advice will suffer because creative thinking squeezes out critical thinking. If so, it is a minor risk worth taking. As story after story in science and art attest, dissatisfaction or some other discomfort with the status quo, along with curiosity about the unknown, is precisely the spur to new, breakthrough ideas.

Education-based responses

Creativity can be taught, although it is also clear that people naturally vary in their talents. For example, variously talented art students may all be taught how to observe, copy, work with their materials, but their results will not all be first-rate. While I am aware of some scattered efforts to develop creative thinking skills for policy analysis, there is little supporting literature beyond that treating techniques (such as brainstorming) or providing mere exhortation. Other elements of alternative modes of thinking are better established: strategic thinking, reflective practice and 'thinking in time' as a policy analytic technique have been taught for years (though, arguably, not with enough attention). Moreover, if these are taught only in programmes that otherwise feature analytic and critical thinking, then creative production of new ideas could be constrained within the critical paradigm.

Several joint design and professional practice business programmes have been established in recent years, including at the Rotman School of Business in Toronto and at Stanford. At Stanford's 'D-School', students from engineering, social sciences, education and design form collaborative teams to solve problems and learn creative methodologies. The Institute of Design at the Illinois Institute of Technology, another design school leader, has developed a 'blueprint' for a master's programme with a goal 'to fuse design skills and methods with policy knowledge and techniques to create an individual capable of developing innovative and relevant solutions to the many problems facing public policy today'. In all of these examples the pedagogy stresses learning by doing in diverse teams, rather than learning and practising techniques. The underlying principles embrace complexity and the designer's own situatedness in the problem context. But, because the designers are practical reasoners, their ideas have also to pass muster in a business or public setting.

An 'intensive' or 'immersion' course, long established in US pre-career policy programmes, and increasingly popular at Victoria University's School of Government, might be adapted to foster creativity. Like the design school models, an intensive course could mix together people of very different experiences, set a real task and (possibly) forgo the classroom setting for the real-world laboratory.

Within the regular curriculum, some additional proposals include:

- Students could be encouraged or required to undertake some historical inquiry and courses in literature and arts.

- Reflective journal-keeping could be mandatory, with students encouraged to reflect across both the curriculum and their experiences.

- More class time could be devoted to the complex and challenging problems (those that do not make good 'textbook' examples), and explicitly approached in different ways.

- Multidisciplinary methods could be explicitly taught, modelled and practised.

Workplace-based responses

Professional development opportunities might usefully be developed along the educational lines sketched above (such as work-release to take part in design intensives). A range of additional workplace efforts could enhance and support creativity. Apprenticeships and mentoring both establish intensive relationships (one-to-one or one-to-team) that foster learning through practice, open questioning of practice and reflection. While some departments already have some mechanisms to close the learning loop on completed projects, more could be done to disseminate examples of good and bad thinking, and to maintain a clearing-house-style repository of good examples. These suggestions transplant the 'case-based' model of learning in an educational setting to the practice setting, so that practitioners can better draw lessons for their own practice from narratives of others' practice. A key would be to present these narratives with explicit attention to multiple frames of analysis, the ins and outs of iterative learning towards a solution, and reflections on any direct engagement with 'creative' thinking. Finally, there is scope for departments to target more resources towards encouraging creativity to flourish within policy-realistic constraints. Such efforts need to be more than flash-in-the-pan sessions, and might perhaps become a regular facet of departments' forward-looking research plans.

These suggestions emphasise the development of thinking and reasoning, rather than the development of knowledge-handling skills only. They require a culture of 'space and safety' that would provide the necessary conditions for creative and innovative thinking. They have implications for the manner in which staff are recruited and managed, both as individuals and as members of teams, and for life-long learning. They privilege the experience that is a *sine qua non* of professional practice. The case for encouraging the flourishing of creative thinking for policy analysis and advice is robust. The time is right. What ideas do you have?

A note on sources

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