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Using Scenarios in Public Policy

Abstract

Futures thinking is a field rich in a wide range of tools and techniques. Of these, scenario development has perhaps the most potential to assist future-focused policy development. This article seeks to stimulate discussion and inform practice in New Zealand, first, by exploring the history of scenarios, and second, by investigating a past scenario development process which sought to guide national health policy.

Keywords scenarios, futures thinking, health policy

2020 is a significant year for futures thinking (aka foresighting) in the New Zealand public sector. Inevitable references to '2020 vision' aside, new state sector legislation includes a requirement for long-term sector statements. The Department of the Prime Minister and Cabinet has compiled a set of futures thinking resources and tools, and explained the benefits of their use (Department of the Prime Minister and Cabinet, 2019). A substantial report, prepared in collaboration with the Office of the Clerk of the House of Representatives, aims to help make government more accountable for the quality of its long-term decision making (Boston, Bagnall and Barry, 2019). There is also a forum, coordinated by Inland Revenue, for the public sector to build capability and apply the discipline of futures thinking. A substantial report from the non-governmental sector has recommended a Future Generations Act to sit above a new (environmentally focused) Futures Commission, a National Futures Strategy and a Futures Group of officials to provide integrated advice to ministers and Cabinet (Severinsen, 2019). The field of futures thinking appears to be making a comeback, after a history in which its fortunes have ebbed and flowed (Menzies, 2018).

This is a field rich in a wide range of tools and techniques. Among others, the Department of the Prime Minister and Cabinet website lists horizon scanning, the futures wheel, scenarios, backcasting, the Delphi technique, cross impact matrix, causal layered analysis and visioning.

Of these, by far the most widely used in the US government have been horizon

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scanning/trend analysis and scenarios (Greenblott et al., 2019). Practically, it is difficult to separate these two, as the former is an essential input to the latter. In New Zealand, future scenarios have been developed in health (Krieble and Middleton, 1997), tourism (Yeoman, 2008), retirement income policy (Boven and Grace, 2013) and the transport sector (Ministry of Transport, 2014a, 2014b, 2014c, 2016, 2017, 2019, n.d.), and for the future of work (Productivity Commission, 2019).[1] The OECD has also provided guidance on the use of scenarios (OECD, n.d.).

Acceptance of scenarios is influenced by source credibility (i.e. who developed them), content credibility (what they say) and channel credibility (by whom and how they are presented).

The scenario technique has the potential to contribute much to future-focused policy development, but there is considerable variability in its application and impact (Volkery and Ribeiro, 2009). This article aims to stimulate discussion and help inform practice in New Zealand by, first, exploring the history of scenarios, and second, by reviewing and learning from a past scenario development process which sought to guide national health policy. We conclude by recommending that scenarios be considered for use across different areas of public policy, particularly where there are seemingly intractable problems or different positions are highly polarised.

A short history of scenarios

The lineage of scenarios has been consistently traced back to its beginnings after the Second World War (e.g. Amer, Daim and Jetter, 2013; Millett, 2003; Varum and Melo, 2010). Herman Kahn is generally regarded as the 'father' of the scenario, particularly in the United States. Kahn defined a scenario as 'a set of hypothetical events set in the future constructed to clarify a possible chain of causal events as well as their decision points' (Amer, Daim and Jetter, 2013). He developed geopolitical scenarios to help understand the strategic implications and possible outcomes for a world which for the first time contained several nuclear-armed powers.

Pierre Wack built on Kahn's ideas to introduce scenarios to the corporate sphere (Wack, 1985a, 1985b), particularly the Shell Oil Company, which famously used scenarios to anticipate the various oil crises of the early 1970s and to come through those in better shape than did competitors. Members of the team at Shell went on to become proponents of the scenario technique (Schwartz, 1991, 1996; Van der Heijden, 1996), as did other thinkers and writers such as Schoemaker (1995).

In his often-cited papers, Wack (1985a, 1985b) outlined issues that still resonate today. Unlike forecasts, which managers rely upon to be accurate guides to decision making, scenarios reflect an inherently uncertain future. Wack thought that organisations that could not quickly adapt would die. What was required was not so much new ways of planning as new ways of managerial thinking (Wack coined the phrase 'the gentle art of reperceiving'). Scenarios were means for changing thinking, and for communication.

> Strategies are the product of a worldview. When the world changes, managers need to share some common view of the new world. Otherwise, decentralized strategic decisions will result in management anarchy. Scenarios express and communicate this common view, a shared understanding of the new realities to all parts of the organization. (Wack, 1985a)

From the perspective of today, it might be assumed that the best way to ensure connection with and between scenarios and managers, and to achieve 'gentle reperceiving', would be to use highly participatory processes. However, later analysis of Wack's writings (Chermack and Coons, 2015) shows that he thought scenario planning as a group process was a 'dangerous trap' which led to 'regression to the mean' or conventional, mediocre thinking.[2] He favoured instead an approach based on workshops as a form of group interviewing, providing input to expert developers who would follow up with stunning presentations to win decision makers' support. Wack did see side benefits from group processes, such as team building, group dialogue and the sharing of mental models. But to him the primary purpose of scenarios was to change the way decision makers saw the world, so that they would act with a wider, more informed point of view. The world is a 'noisy' place and Wack (1985b) quotes Roberta Wohlstetter (1962):

> to discriminate significant sounds against this background of noise, one has to be listening for something or for one of several things ... one needs not only an ear but a variety of hypotheses that guide observation.

Scenarios provide these hypotheses or mental maps[3] that enable heightened sensitivity to the signals that are important (Schoemaker, 1993). Schoemaker describes the theory, practice and methodology that underpin scenarios. To him, scenarios are Hegelian in their underlying philosophical premise (the method courts contradiction and paradox), in contrast to the Liebnizian approaches of traditional decision analysis and forecasting which seeks a single truth and representation of reality.

> The gist of the scenario method seems that it is many things: art and science, deduction and induction, structured and fluid, rational (in the unitary actor sense) and political. These multiple facets have caused it to remain elusive and fuzzy by academic standards. Nonetheless, the use of scenarios in strategic management is real, important and growing (ibid.)

There is also value in thinking about change in whole systems rather than as a series of policy projects. Scenarios prompt thinking about systems as a counter to the reduction of complex dynamic systems to linear logic models 'inculcated with closed system concepts, categories and catechisms that are the bedrock of the project design mentality' (Patton, 2019).

Futures thinking developed in parallel in other parts of the world. By the late 1950s, Gaston Berger had established the French school of prospective thinking, which emphasised preparation for multiple futures to unfold – leading in turn to an insight that good planning spurs action that changes the present in preparation for the future (Durance, 2010; Spaniol and Rowland, 2018). Berger's work in the French school of futures thinking was carried on by Michel Godet (1982), among others. The work of Bernard de Jouvenel (1967) was also of seminal importance, while on the other side of the English Channel the concept of 'foresight' in this context was derived as a counterpoint to the 'hindsight' gained from retrospective studies of how technological innovations had come about (Martin, 2010).

Definitions, criteria and benefits

Schoemaker defined scenarios as 'focused descriptions of fundamentally different futures presented in coherent script-like or narrative fashion' (Schoemaker, 1993). If scenarios are presented as possibilities, rather than firm predictions, they become psychologically less threatening to those holding different world views. Acceptance of scenarios is influenced by source credibility (i.e. who developed them), content credibility (what they say) and channel credibility (by whom and how they are presented). Schoemaker differs from Wack in arguing that the scenario-building process should not be entirely entrusted to an intellectual elite.

Other useful criteria for measuring the quality of scenarios are included in another paper, which also provides a practical guide to their development (Schoemaker, 1995): scenarios should be relevant, internally consistent and archetypal (i.e. describe generically different futures rather than variations on one theme). Ideally, each scenario should also describe an equilibrium or a state in which the system might exist for some length of time, as opposed to being highly transient. Unusually among early writers, Schoemaker addressed the question of 'do scenarios work?', albeit narrowly, by attempting to measure impact on sales.

Although more criteria have been offered by which the quality or effectiveness of scenarios might be measured (Amer, Daim and Jetter, 2013; Cairn et al., 2006; Coates, 2000), very few attempts have been made to evaluate quality, outcome or impact of scenarios (Varum and Melo, 2010; Wright, Bradfield and Cairns, 2013). One exception in the corporate sector found that future-prepared firms outperformed the average on growth and profitability (Rohrbeck and Kum, 2018).

A significant barrier to evaluation may be that foresight is considered more of a consulting field than an academic one, so that not much work is public and even less makes it into journals for review or citation. Foresight 'is closer to management and financial consulting where practices are judged by the market as accepted without formal evaluation, though this is changing as training assessment metrics become the norm' (Gardner and Bishop, 2019).

> Futures work challenges assumptions and helps us to be more cognisant of risks and opportunities. The problem with evaluating futures work is that once an insight has been accepted it seems obvious – at the end of the process it all looks obvious even though it did not at the start. (Jackson, 2019)[4]

This quotation from Jackson is a nice description of 'hindsight bias'.

Nonetheless, the use of scenarios has continued to increase (Amer, Daim and Jetter, 2013), which begs the questions 'why is that?' and 'how are scenarios being developed and used?' It may be that the evolution of corporate forms and increasing complexity of decision making creates the need for more, nuanced sources of information and insight (Scharmer, 2007), and scenarios fit the bill. Quantification is still important, but for some people scenario-based narratives, metaphors and visual approaches such as causal maps are often easier to relate to, absorb and communicate than are lists of facts and trends contained in conventional reports.

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Process

Mostly, emphasis seems to be placed on participatory processes, team building and organisational learning (Cairns et al., 2006; Coates, 2000; Millett, 2003; Varum and Melo, 2010). However, Durance and Godet distinguish between

> scenario (processes) which are highly confidential and used exclusively by executive managers and those which are used as a tool for group process in order to mobilize the collective intelligence of an organization faced with a rapidly evolving external environment. These latter studies are highly focused on the communication of strategy as a central objective; whereas with the former, foresight is specifically used for developing enterprise strategy. (Durance and Godet, 2010)

This duality of purpose and 'access' to the fruits of scenarios is reprised to some extent by Varum and Melo (2010) and echoes Wack's apparent 'elitist' view of process (Chermack and Coons, 2015).

From scenarios' early beginnings there have been debates about the technique which continue in the present day. The term scenario *planning* has become less favoured (notwithstanding the view of

human agency implied by prospective thinking) because it suggests a mechanistic or deterministic view more associated with forecasting. Integrating scenarios with strategic planning has also remained problematic.

There continue to be different views as to whether scenarios should be descriptive of possible futures or normative, i.e. paint pictures of one or more desirable futures (more akin to visions of the future). An associated question relates to the purpose of scenario development. Is it to derive 'correct' or 'accurate' scenarios, in which case an exhaustive set of steps and much testing may be required, or is it the process itself that is most important? Proponents of the latter view hold that in the long term accuracy is impossible and the process is more important because it builds understanding of futures issues, contributes to shared learning, challenges conventional wisdom and opens up minds to alternative (likely better) strategies that would otherwise be overlooked; in which case, diversity of input becomes more important since it allows a broader range of inputs and the opening up of more minds.

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Learning from history

The recognition that our world is developing more quickly and less predictably is not new. As noted in the introduction, there have been several recent attempts to respond to uncertainty through the use of scenarios. However, a rare earlier example of a health scenario exercise, undertaken in 1997, offers an opportunity to learn about the usefulness of the technique from the standpoint of the future that was being considered more than 20 years ago.

The health sector is affected by both relatively predictable trends, such as the ageing of the population and the increase in lifestyle-associated health risks and diseases, and the more uncertain effects of technological change and differences in access to health resources. In 1997 the New Zealand health system was coming to the end of a decade of radical change and still faced a challenging future. To help galvanise some futures thinking, the then Institute of Policy Studies at Victoria University of Wellington conducted a series of workshops about potential long-term futures for New Zealand's health sector. From those workshops was compiled a summary report entitled *Health Futures: 2020 visions* (Krieble and Middleton, 1997), which contained five scenarios for 2020 and proposed itself as a starting point for the development of a vision 'of what a diverse society may want (from its health system) and how the future may be influenced'. The five scenarios were:

1. Muddling Through: ad hoc adjustments to current challenges. In this scenario, steady economic growth has fuelled advances in information and intervention technologies; however, the gap between available resources and consumer expectations has grown. New approaches to delivering services co-exist with traditional structures.
2. A Technocrat's Dream: a technically highly tuned and less politicised version of the present system. Here, funding levels have kept pace with demographic and economic growth and significant capital injections have been made to get key technological advances off the ground.
3. Two Tiers: a two-tier system brought about by policy gridlock (described in the report as a scenario unlikely to appeal to those within the health sector but which others outside might choose). The two tiers are represented by a publicly funded health service which mainly provides an accident and emergency service and basic public health, while insurance firms provide care for those who can afford it.
4. Power to the People: a reframed health concept, resulting in partnerships across professions and the public, and across local and central government sectors. With parallels to the Gaia archetypal image of the future where becoming more and more inclusive is what is important (Inayatullah, 2008), this scenario envisions the merger of economic and social policy into a single public policy, leading to solutions to problems that looked insolvable two decades earlier.
5. Positively Private and Global: a system driven by the introduction of private healthcare plans. Domestic health plans trade on being locally responsive, while overseas plans offer economies of scale and competitive prices. The state has redefined its role in health to insurance regulation and wider national health matters.

Given that we are now in a future whose possibilities were being imagined over two decades ago, a high-level evaluation, drawing heavily on hindsight, has investigated how useful these scenarios were to decision makers. The results are reported in full in Menzies and Middleton (2019). What follows is a summary of what was done and the conclusions that were drawn.

Evaluating the 1997 scenarios from the perspective of 2020

To develop the 1997 scenarios a series of workshops was held, involving 28 people (including the current authors)[5] from government, business, academia and parts of the health service. Participants were provided with a background document which described a range of drivers of change, based on health policy literature, New Zealand health policy documents and health futures exercises in Australia, the United Kingdom and United States. Information on demographic and social trends (for example, changing family structures and dependency ratios as a result of an ageing population) were included in the background paper, as were epidemiological trends, including,

for example, the potential for an increase in infectious disease as a result of antibiotic resistance and low socio-economic status. With the assistance of decision support software, participants ranked and sorted the likely magnitude and impact of these and other drivers. The final scenarios were then drafted, focusing on those drivers and values where participants collectively thought there was the most uncertainty in how a response might play out. What this meant is that (rightly or wrongly) demographic, social and epidemiological trends were not viewed as highly uncertain but were considered a likely backdrop to all the scenarios. Instead, the scenarios were differentiated by those drivers and values participants thought could have widely different trajectories. Health gain, fair access, and quality came through as the most important values in a future health system. The drivers that could be increasing in importance, decreasing in importance or staying much the same included: rationing pressures; information technology; research and development; efficiency; consumer sovereignty; and personal responsibility.

The underlying logic of the 1997 exercise was that credibly developed scenarios would open the minds of decision makers to possibilities they would not have otherwise considered, leading to better decisions, more relevant, resilient strategies and better health outcomes for New Zealanders. We did not know how much this logic was shared by participants, but in order to test whether the 1997 scenarios did improve longer-term thinking, in 2018 we used criteria proposed by Schoemaker (1993, 1995) as the basis for a high-level evaluation.

These criteria were addressed through a series of semi-structured interviews with five original workshop participants, three of whom are still involved in health policy at senior levels, and one additional 'modern day equivalent' (i.e. someone who would have been involved had the 1997 process been run today) about their views of developments in the health sector over the last 20 years. The inclusion of people with continuous involvement proved useful, because they were well equipped to recall the state of play in 1997 and developments since. The criteria covered:

- relevance (in relation to wider needs and impact on decision makers and strategy);
- credibility (of source, content and channel);
- coherence (internal consistency);
- 'archetypality' (truly distinct from each other);
- genuinely long term and future-focused.

The interviews also probed:

- What elements of the scenarios have come to pass?
- To what degree were the 'signals' from the future recognised?
- What signals were missed altogether?

In order to orientate our work to the same shared history of change, we supplemented our interviewees' assessment of the underpinning drivers and values that shaped each scenario with the relevant literature on health policy change since 1997.

Findings

The 1997 scenarios were drafted at a time when New Zealand was moving away from a conviction that widespread structural reforms were going to translate seamlessly into improvements. The health futures exercise offered an opportunity to 'safely' explore, outside of entrenched ideological positions, what health sector change could look like. Interviewees in 2019 were struck by the ongoing relevance of the underpinning drivers and values that had shaped each scenario in 1997. Combinations of these drivers and values had been explored in each scenario to present distinctive chains of plausible events. Rather than comment solely on the plausibility of each scenario, interviewees reflected on which of the drivers and values continue to dominate discussions on health sector change. Below is a summary of what was covered.

Rationing pressures less dominant

A prominent driver across all scenarios was rationing pressures. In 1997 considerable policy effort was expected to go towards managing public expectations, rising costs and constrained healthcare budgets. Today, rationing pressures continue, but interviewees reflected that discourses about rationing are not as prominent. A cynical view is that there has been a reframing and devolution of rationing 'out of sight' and the country is in denial about this still looming issue (Treasury, 2016). In the last 20 years the locus of decision making moved away from centrally accountable health sector agencies to 20 locally based district health boards. Interviewees pointed out that hard prioritisation calls are still being made by these boards, but the debate is now shifting towards how much New Zealand wants to have national consistency in these decisions and how much is it prepared to live with local variation based on local assessment of needs. In part these changes are linked to the prevailing political climate, and it is worth noting that New Zealand has had two different governments of nine years' duration – one centre-left and one centre-right – since the 1997 exercise.

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Primary healthcare noted but underplayed

The pressures of an ageing population were clearly foreseeable in 1997, prompting concerns about the health sector's ability to cope with chronic conditions such as diabetes and ageing-related neurodegenerative diseases. These fears have been realised. Current policy attention is being paid to improving long-term condition management, with a strong emphasis on greater responsiveness from the primary care sector in managing these conditions (Ministry of Health, 2016). Looking back on the scenarios, little

attention was paid to the distinct role of the primary sector in the health system in managing chronic conditions. The collectivisation of primary care through new mid-level organisations representing general practice interests was not foreseen, though the potential for better integration of primary and secondary care services due to the spread of larger primary care provider organisations was recognised.

It is not the job of a futures project to predict the future, but to challenge the assumption that the future can be forecast from known trends and will look a lot like the present.

Research and development and information technology's continued importance as drivers

The scenarios also foresaw the potential impact of research and development and information technology drivers. Under the title Research and Development were included discoveries expected to assist in improving diagnoses, treatment and system performance, as well as the potential for ethical issues to result. The Technocrat's Dream scenario highlighted the potential for better information collection and sharing across the sector, including hospital booking systems and unique personal identifiers. What was underplayed was the potential for a digital divide, the social processes needed to support technological change, and the move towards myriad personal information technology systems. Calls in the recent New Zealand health strategy for 'smart systems' (Minister of Health, 2016) reflect the long-run interest in the gains expected from new digital ways of working, but interviewees pointed out that much of the potential is still unrealised. In particular, concerns were raised that current ways of delivering health services are not keeping pace with consumer expectations, nor efficiently leveraging mobile and digital technologies.

Signals concerning patient-centred care

Early signals of the importance of patient-centred care were evident in the Power to the People scenario. Other important ideas concerning the broader concept of well-being rather than illness, the socio-economic determinants of health and the importance of consumer empowerment were all anticipated. These centred on one scenario only but were a weak early signal of a set of ideas that have received significant health policy attention since 1997. The introduction of Whānau Ora in New Zealand as a philosophy of holistic health and development operationalised by Māori providers is one obvious example (Boulton and Gifford, 2014).

Shifting private sector roles

One scenario – Two Tiers – presented a health sector in 2020 where New Zealanders had given away any desire to have a universally accessible public health system. This scenario was designed to direct attention towards a future to prevent rather than aspire to – i.e. a future where the state provides an inadequate safety net for the uninsured, public confidence in the public health system fades and policy gridlock prevents progress. The arc of health policy change since 1997 has avoided this scenario, with policies focused on managing a largely state-funded system with an emphasis on quality, efficiency and responsiveness alongside social democratic values (Cheyne, O'Brien and Belgrave, 2008). Interviewees suggested that the debate about privatisation of the health sector and withdrawal of the state encompassed in the Two Tiers scenario missed the more nuanced ways in which the private sector has made inroads into the New Zealand system. Examples included the quiet influx of corporate players into primary care as a way of managing increased demand through shared services, and the rise of private sector responses such as retirement villages in response to home care demands. Moreover, the ongoing tension between the marketing of some products and health promotion activities – for example, high levels of sugar in processed food and drink conflicting with efforts to reduce sugar intake – are further examples of the type of private–public issue not anticipated in any scenario.

Health workforce underplayed

Standing back, a key area that was missed in nearly all the scenarios was consideration of the health sector workforce, alongside a sense of how the structural power of the professions may hinder or enhance change. New occupational groups originating from nursing were anticipated to 'fulfil the need for hybrid skill sets resulting from consumer demand' (Muddling Through scenario). However, while the global nature of the workforce was acknowledged in the Positively Private and Global scenario, missed in all five scenarios were the challenges of an ageing general practice workforce, uneven distribution of the workforce between rural and urban areas of New Zealand, and the need to increase the number of Māori students entering health science, medicine and other professional programmes. Surprisingly, and for reasons that are now lost in the mists of time, representatives from the professional colleges and other health workforce unions were not included in the list of workshop participants, which may explain why workforce issues were underplayed. Interestingly, the most extensive futures work that has been undertaken since the scenario exercise has been the work of Health Workforce New Zealand, which sought to build a picture of the health workforce in 2020. This work involved assembling small groups of clinicians to assess the current situation in 15 specialised areas and provide recommendations for improvements.[6] An attempt was made to partner conventional workforce planning approaches with foresight data to consider how the powers of different actors could potentially shape different professional futures (Rees et al., 2018).

How were the scenarios used?

Using criteria identified by Schoemaker (1993, 1995), the 1997 scenarios themselves were relevant, credible and coherent, but not particularly archetypal (this was intentional – they were designed to overlap each other). The process used was valuable in opening up decision makers' minds to possibilities without them needing to feel threatened or defensive, but, given the New Zealand context, it could have been more inclusive. That said, the conundrum of a highly consultative process versus a 'think tank' approach cannot be resolved by a single evaluation. It may also be that the 1997 scenarios did not have a long enough time frame, since there have been repeated nine-year swings of the political pendulum in New Zealand, with consequent changes of direction in the health system. A longer time frame would allow for 'political swings and roundabouts' to be treated as a factor to be considered in the development of robust strategy.

In terms of impact on decision making, all interviewees remembered the 1997 scenarios being talked about, albeit for a relatively short time before being overtaken by other developments. The initiative 'slipped away' from decision makers' fields of vision for a number of reasons: its discretionary nature, with no explicit follow-up required; it was time-bound rather than continuous – once finished it was out of sight and easily forgotten; and it was championed by a small group rather than the whole of senior management – a serious mistake (Wilkinson and Kupers, 2014). It would be fair to say that if minds were opened up to the future, it was only for a short time. One respondent suggested that 'scenario thinking is not a natural way of thinking' and would take years to embed properly. Another pointed out that the scenarios were referred to in academic circles more so than in policy ones.

Conclusion

It is not the job of a futures project to predict the future, but to challenge the assumption that the future can be forecast from known trends and will look a lot like the present. This article considers the history of scenario development as a technique that enables a 'whole system' perspective and supports the design of effective policies and strategies in the face of uncertainty.

We have also investigated what was learned from a process that set out two decades ago to help achieve better health outcomes for today's New Zealanders. Many of the changes that emerged over those decades were inevitable and foreseeable, but others were surprising. Elements of all the 1997 scenarios have emerged, and the health system has responded as best it could. Perhaps it could have benefited from being more foresightful.

That said, we have been unable to determine whether the 1997 scenarios helped, or whether 'better' scenarios would have made a positive difference in the health sector. Hindsight leads us to conclude that any future scenario development project should be designed with evaluation in mind. It is especially important to establish baselines and continuously monitor impacts.

Scenario development might be applied in other areas of public policy, particularly where there are seemingly intractable problems to be solved, or polarised views about future directions. Scenarios allow for the systematic development and description of alternative futures that are not 'hard and fast' and enable discussion to occur with the temperature turned down. Since elements of all scenarios are likely to emerge, there is no contest between them to be the winner, and the focus can shift to designing policies and strategies that will be relevant and robust, no matter what occurs. Scenarios complement traditional approaches rather than replace them, and allow for the desired whole-system perspective.

There remains some contention about the best process for scenario development, and our future research will consider the experiences of other jurisdictions – for example, Singapore and Finland. However, New Zealand's unique economic, social and cultural context clearly requires inclusivity rather than exclusivity – breadth as well as depth (Menzies and Middleton, 2019). This approach requires a judicious mix of independent research and expertise, representative advice, broad consultation, and communication of outcomes through multiple channels.

We also suggest that rather than being delegated and/or carried out during a discrete time period, scenario development should be embedded at the level of senior management as a continuous and constantly updated process. It is encouraging to see scenarios being used and refined in parts of the New Zealand public sector, but more work needs to be done to ensure that they mesh effectively with decision making. Hopefully, growth in use will continue, so that collectively we continue to bank experience and grow good practice.

1 These are scenarios that have been published or are still in the public domain. Anecdotally, the authors are aware of others having been developed by the Department of Conservation, Ministry for Primary Industries and Treasury. There are bound to be still others, along with scenario work that is more in the nature of option development or sensitivity analysis – all valuable but outside the scope of this article.

2 A charge also sometimes levelled at the Delphi technique.

3 Similar to the 'mental models' described by Johnson-Laird (1983).

4 Scenarios prepared for the transport sector challenged the assumption that demand could only increase and focused the debate on access instead, with considerable flow-on effects for urban design and land use. In health in the 1990s, it was assumed there would be continuous, successful growth in immunisation programmes (Longley and Warner, 1995). Health professionals now know not to take this for granted, due in no small part to unanticipated developments such as some rogue research, resistance from an 'anti-vaxxer' movement, and complacency due to the virtual disappearance of some diseases.

5 Malcolm Menzies as a representative of the now-disestablished New Zealand Futures Trust (see www.futuretimes.co.nz); Lesley Middleton from the Ministry of Health.

6 See https://www.health.govt.nz/our-work/health-workforce/workforce-service-forecasts.

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References

Amer, M., T.U. Daim and A. Jetter (2013) 'A review of scenario planning', *Futures*, 46, pp.23–40, https://doi.org/10.1016/j.futures.2012.10.003

Boston, J., D. Bagnall and A. Barry (2019) *Foresight, Insight and Oversight: enhancing long-term governance through better parliamentary scrutiny*, Wellington: Institute for Governance and Policy Studies

Boulton, A.F. and H.H. Gifford (2014) 'Whānau ora; he whakaaro ā whānau: Māori family views of family wellbeing', *International Indigenous Policy Journal*, 5 (1), https://ir.lib.uwo.ca/cgi/viewcontent.cgi?referer=https://www.google.com/andhttpsredir=1andarticle=1149andcontext=iipj

Boven, R. and L. Grace (2013) *Implications of Global Trends for Retirement Income Policy*, Wellington: Stakeholder Strategies, https://stakeholderstrategies.co.nz/wp-content/uploads/retirement-income-policy.pdf

Cairns, G., G. Wright, K. Van der Heijden, R. Bradfield and G. Burt (2006) 'Enhancing foresight between multiple agencies: issues in the use of scenario thinking to overcome fragmentation', *Futures*, 38 (8), pp.1010–25, https://doi.org/10.1016/j.futures.2005.12.020

Chermack, T.J. and L.M. Coons (2015) 'Scenario planning: Pierre Wack's hidden messages', *Futures*, 73, pp.187–93, https://doi.org/10.1016/j.futures.2015.08.012

Cheyne, C., M. O'Brien and M. Belgrave (2008) *Social Policy in Aotearoa New Zealand*, Auckland: Oxford University Press

Coates, J. (2000) 'Scenario planning', *Technological Forecasting and Social Change*, 65 (1), pp.115–23, file://staff/Home/FOH/menziem3/DocumentsRedir/Coates%20Scenario%20Planning.pdf

de Jouvenel, B. (1967) *The Art of Conjecture* (trans. N. Lary), New York: Basic Books

Department of the Prime Minister and Cabinet (2019) 'Futures thinking', https://dpmc.govt.nz/our-programmes/policy-project/policy-methods-toolbox/futures-thinking

Durance, P. (2010) 'Reciprocal influences in future thinking between Europe and the USA', *Technological Forecasting and Social Change*, 77 (9), pp.1469–75, doi:https://doi.org/10.1016/j.techfore.2010.06.006

Durance, P. and M. Godet (2010) 'Scenario building: uses and abuses', *Technological Forecasting and Social Change*, 77 (9), pp.1488–92, doi:https://doi.org/10.1016/j.techfore.2010.06.007

Gardner, A.L. and P. Bishop (2019) 'Expanding foresight evaluation capacity', *World Futures Review*, 11 (4), pp.287–91, doi:10.1177/1946756719866271

Godet, M. (1982) 'From forecasting to "la prospective" a new way of looking at futures', *Journal of Forecasting*, 1 (3), pp.293–301, doi:10.1002/for.3980010308

Greenblott, J.M., T. O'Farrell, R. Olson and B. Burchard (2019) 'Strategic foresight in the federal government: a survey of methods, resources, and institutional arrangements', *World Futures Review*, 11 (3), pp.245–66

Inayatullah, S. (2008) 'Six pillars: futures thinking for transforming', *Foresight*, 10 (1), pp.4–21

Jackson, A. (2019) 'Reflections on scenarios in transport policy', personal communication

Johnson-Laird, P.N. (1983) *Mental Models: towards a cognitive science of language, inference and consciousness*, Cambridge: Cambridge University Press

Krieble, T. and L. Middleton (1997) *Health Futures: 2020 visions*, Wellington: Institute of Policy Studies

Longley, M. and M. Warner (1995) 'Future health scenarios: strategic issues for the British health service', *Long Range Planning*, 28, doi:10.1016/0024-6301(95)00024-d

Martin, B.R. (2010) 'The origins of the concept of "foresight" in science and technology: an insider's perspective', *Technological Forecasting and Social Change*, 77 (9), pp.1438–47, doi:https://doi.org/10.1016/j.techfore.2010.06.009

Menzies, M.B. (2018) 'A partial history of futures thinking in New Zealand', *Policy Quarterly*, 14 (1), pp.18–26

Menzies, M.B. and L. Middleton (2019) 'Evaluating health futures in Aotearoa', *World Futures Review*, 11 (4), https://doi.org/10.1177/1946756719862114

Millett, S.M. (2003) 'The future of scenarios: challenges and opportunities', *Strategy and Leadership*, 31 (2), pp.16–24, doi:10.1108/10878570310698089

Minister of Health (2016) *New Zealand Health Strategy: future direction*, Wellington: New Zealand Government, https://www.health.govt.nz/system/files/documents/publications/new-zealand-health-strategy-futuredirection-2016-apr16.pdf

Ministry of Health (2016) *New Zealand Health Strategy 2016*, Wellington: Ministry of Health, https://www.health.govt.nz/publication/new-zealand-health-strategy-2016

Ministry of Transport (2014a) *Future Demand: New Zealand transport and society: scenarios to 2042*, https://www.transport.govt.nz/assets/Uploads/Our-Work/Documents/2a17807dc0/fd-scenarios-for-2042.pdf

Ministry of Transport (2014b) *Future Demand: insights into the scenario planning methodology*, https://www.transport.govt.nz/multi-modal/keystrategiesandplans/strategic-policy-programme/future-demand/

Ministry of Transport (2014c) *Future Freight Scenarios Study*, https://www.transport.govt.nz/assets/Uploads/Research/Documents/7405314da3/Future-Freight-Scenarios-Study.pdf

Ministry of Transport (2016) *Regulation 2025: scenarios summary and key findings*, https://www.transport.govt.nz/assets/Uploads/Our-Work/Documents/c7d1e8c4b8/Reg-2025-Scenarios-and-Findings.pdf

Ministry of Transport (2017) *Transport Outlook: future state: a starting discussion on the future of transport in New Zealand*, https://www.transport.govt.nz/mot-resources/transport-outlook/

Ministry of Transport (2019) 'Future Demand', https://www.transport.govt.nz/multi-modal/keystrategiesandplans/strategic-policy-programme/future-demand/

Ministry of Transport (n.d.) *Public Transport 2045: a working paper on urban transport in the shared mobility era*, https://www.transport.govt.nz/assets/Uploads/Our-Work/Documents/dbf34ecb01/Public-Transport-2045.pdf

OECD (n.d.) 'Why use scenarios?', http://www.oecd.org/site/schoolingfortomorrowknowledgebase/futuresthinking/scenarios/whyusescenarios.htm

Productivity Commission (2019) *New Zealand, Technology and Productivity: technological change and the future of work (draft report 1)*, Wellington: New Zealand Productivity Commission

Patton, M.Q. (2019) 'Expanding futuring foresight through evaluative thinking', *World Futures Review*, 11 (4), pp.296–307, doi:10.1177/1946756719862116

Rees, G.H., P. Crampton, R. Gauld and S. MacDonell (2018) 'The promise of complementarity: using the methods of foresight for health workforce planning', *Health Services Management Research*, 31 (2), pp.97–105

Rohrbeck, R. and M.E. Kum (2018) 'Corporate foresight and its impact on firm performance: a longitudinal analysis', *Technological Forecasting*

and Social Change, 129, pp.105–16, https://doi.org/10.1016/j.techfore.2017.12.013

Scharmer, C.O. (2007) *Theory U: leading from the future as it emerges*, Oakland: Berret-Koehle

Schoemaker, P. (1993) 'Multiple scenario development: its conceptual and behavioural foundation', *Strategic Management Journal*, 14 (3), pp.193–213, file:///C:/Users/menziem3/Downloads/Multiple_Scenario_Development_Its_Conceptual_and_B.pdf

Schoemaker, P. (1995) 'Scenario planning: a tool for strategic thinking', *MIT Sloan Management Review*, 36 (2), pp.25–40, file:///C:/Users/menziem3/Downloads/Scenario_Planning_A_Tool_for_Strategic_Thinking.pdf

Schwartz, P. (1991) *The Art of the Long View: planning for the future in an uncertain world*, New York: Doubleday

Schwartz, P. (1996) *The Art of the Long View: paths to strategic insight for yourself and your company*, New York; London; Toronto; Sydney; Auckland: Doubleday

Severinsen, G. (2019) *Reform of the Resource Management System: a model for the future*, Auckland: Environmental Defence Society, https://www.eds.org.nz/assets/Publications/RMLR%20Model%20for%20the%20Future_WEB.pdf?k=fed3e5b176

Spaniol, M.J. and N.J. Rowland (2018) 'The scenario planning paradox', *Futures*, 95, pp.33–43, https://doi.org/10.1016/j.futures.2017.09.006

Treasury (2016) *He Tirohanga Mokopuna: 2016 statement on New Zealand's long-term fiscal position*, Wellington: New Zealand Treasury, https://treasury.govt.nz/publications/ltfp/he-tirohanga-mokopuna-2016-statement-new%C2%A0zealands-long-term-fiscal-position-html#section-11

Van der Heijden, K. (1996) *Scenarios: the art of strategic conversation*, Chichester: Wiley

Varum, C.A. and C. Melo (2010) 'Directions in scenario planning literature: a review of the past decades', *Futures*, 42, doi:10.1016/j.futures.2009.11.021

Volkery, A. and T. Ribeiro (2009) 'Scenario planning in public policy: understanding use, impacts and the role of institutional context factors', *Technological Forecasting and Social Change*, 76, doi:10.1016/j.techfore.2009.07.009

Wack, P. (1985a) 'Scenarios: uncharted waters ahead', *Harvard Business Review*, September, https://hbr.org/1985/09/scenarios-uncharted-waters-ahead

Wack, P. (1985b) 'Scenarios: shooting the rapids', *Harvard Business Review*, November–December, pp.139–50, https://rjohnwilliams.files.wordpress.com/2016/02/wack-scenarios-hbr2-1985.pdf

Wilkinson, A. and R. Kupers (2014) *The Essence of Scenarios: learning from the Shell experience*, Amsterdam: Amsterdam University Press

Wohlstetter, R. (1962) *Pearl Harbour: warning and decision*, Stanford: Stanford University Press

Wright, G., R. Bradfield and G. Cairns (2013) 'Does the intuitive logics method – and its recent enhancements – produce "effective" scenarios?', *Technological Forecasting and Social Change*, 80 (4), pp.631–42, https://doi.org/10.1016/j.techfore.2012.09.003

Yeoman, I. (2008) *Tomorrow's Tourist: scenarios and trends*, Elsevier